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ABSTRACT

Governments urgently need better national information bases for determining educational policy and practice in an increasingly interconnected world. This report, from the first phase of the Centre for Educational Research and Innovation (CERI), presents a framework for improved international cooperation in improving the knowledge base for educational practice and policy formation. The information is based on CERI seminars and country reports from Australia, Belgium, Denmark, Germany, The Netherlands, New Zealand, Spain, Sweden, Switzerland, the United States, and the United Kingdom. The first chapter presents the statement of the problem and explains how the study was conducted. The second chapter examines some of the pervasive criticisms directed at educational research and describes some implications for research policy. An analysis of what the term "educational research and development" means is presented in the third chapter. Chapter 4 describes the current position of educational research in a group of Organisation for Economic Cooperation and Development (OECD) countries, using several indicators of research-and-development finance and staffing. Chapter 5 discusses how educational research relates to policy and practice and how this relationship might be improved. The sixth chapter considers what the knowledge base in education is and could be like. What are the interests of the various constituencies and how can these interests be better aligned? The last chapter presents a summary of the main challenges and describes the options for government policy. One figure and four tables are included. Appendices contain case studies of innovation in educational research and development (R&D), a list of subject interests from country reports, and a description of the methodology used in measuring indicators of educational R&D. Each chapter contains references. (LMI)

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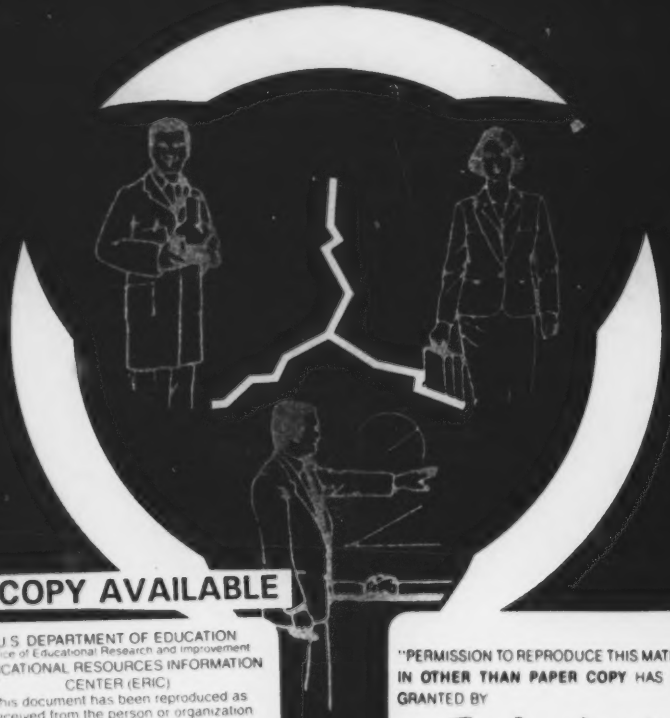

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CENTRE FOR EDUCATIONAL RESEARCH AND INNOVATION

EDUCATIONAL RESEARCH AND DEVELOPMENT

TRENDS, ISSUES AND CHALLENGES

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

3

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Pursuant to Article 1 of the Convention signed in Paris on 14th December 1960, and which came into force on 30th September 1961, the Organisation for Economic Co-operation and Development (OECD) shall promote policies designed:

- to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;
- to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development; and
- to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

The original Member countries of the OECD are Austria, Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The following countries became Members subsequently through accession at the dates indicated hereafter: Japan (28th April 1964), Finland (28th January 1969), Australia (7th June 1971), New Zealand (29th May 1973) and Mexico (18th May 1994). The Commission of the European Communities takes part in the work of the OECD (Article 13 of the OECD Convention).

The Centre for Educational Research and Innovation was created in June 1968 by the Council of the Organisation for Economic Co-operation and Development and all Member countries of the OECD are participants.

The main objectives of the Centre are as follows:

- *to promote and support the development of research activities in education and undertake such research activities where appropriate;*
- *to promote and support pilot experiments with a view to introducing and testing innovations in the educational system;*
- *to promote the development of co-operation between Member countries in the field of educational research and innovation.*

The Centre functions within the Organisation for Economic Co-operation and Development in accordance with the decisions of the Council of the Organisation, under the authority of the Secretary-General. It is supervised by a Governing Board composed of one national expert in its field of competence from each of the countries participating in its programme of work.

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Foreword

Educational research and development are expected to help broaden and deepen knowledge and to offer a repository of insights on which policy-makers and teachers can draw. While researchers have contributed much to improved understanding of problems in education, training and learning, they have often been criticised, rightly or wrongly, for not producing sufficient knowledge for application and action. Researchers, in the pursuit of knowledge, tend to take a positive view of disciplinary developments while policy-makers and practitioners, faced with the need to address concrete problems, often take a more pragmatic view.

This publication reports on the first phase of an ongoing CERI (Centre for Educational Research and Innovation) study on the means and ends of improving the knowledge base for educational practice and policy-making. It underscores both the importance of educational R&D and the obvious need to improve its relevance and efficiency, so that the available funds are used effectively and the scope for additional investment created. But this will largely depend on whether diverse interests can be aligned and better partnerships forged among the "three communities" – researchers, policy-makers, and practitioners. The CERI study was launched with the explicit purpose of identifying the problems and examining ways to improve the situation.

This report was prepared principally by Professor Maurice Kogan, Brunel University, United Kingdom, and Albert Tuijnman of the Secretariat. It is published on the responsibility of the Secretary-General of the OECD.

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Table of Contents

Chapter 1

Statement of the Problem

The Ministers' communiqué 9
Trends in educational reform: the general policy frame 10
Markets for educational research 12
Implications for educational research 14
The aims and design of the study 15
The structure of the report 17

Chapter 2

Issues and Problems in Educational Research

The origins of the "crisis of confidence" 19
Perceived problems 22
The reactions to the crisis 24
Conclusions 27

Chapter 3

What is Educational Research?

Research and the nature of knowledge 29
The disciplinary orientations of educational research 31
Paradigms in educational research 33
A definition of R&D 34
Toward a definition of educational R&D 36
Reaching maturity in diversity? 38
Conclusions 41

Chapter 4

The Position of Educational R&D in OECD Countries

Expenditure on educational R&D 43
Staffing of educational R&D 47
Convergences and divergences in R&D cultures 51
Institutional structures 56
Educational R&D systems and models 57
Conclusions 58

Chapter 5

Educational Policy and Educational R&D: Can the Relationship be Improved?

Models of the relationship between research, policy and practice 59
Content of the knowledge base 62
Linkages in the R&D system 64
How policy and research relate to practice 67
Improving the research system and its relation to policy 69
Conclusions 70

Chapter 6

Meeting the Interests of the Stakeholders

Negotiating the knowledge base 73
Interests of policy-makers 74
Interests of schools, teachers, parents and students 76
Interests of researchers 77
Conflicts between stakeholder groups 78
Approaches to conflict resolution 80
Conclusions 84

Chapter 7

Improving the Knowledge Base: Policy Challenges and Conclusions

Embedding educational research in science policy 85
Deciding on priorities for educational R&D 87
Organising and managing educational R&D 89
Recommendations for improving the knowledge base 94
Recommendations for improving international co-operation 98

Bibliography 101

Annex 1. **Case studies of innovation in educational R&D** 107
A.1. Australia 108
A.2. Austria 117
A.3. Germany 125
A.4. The Netherlands 131
A.5. Portugal 140
A.6. Sweden 147
A.7. Switzerland 155
A.8. United States 160

Annex 2. **List of subject interests drawn from country reports** 173

Annex 3. **Methodology used in measuring indicators of educational R&D** 177

9

Chapter 1

Statement of the Problem

This first chapter explains the background of the study, the trends in educational research and development (R&D) in the OECD countries and presents the aims, questions and issues that are addressed. It outlines the basic premises and perspectives that have guided the conduct of the study and introduces the structure of this report.

The Ministers' communiqué

At their meeting in Paris in November 1990, the OECD Ministers of Education addressed the importance of strengthening the knowledge base for educational policy-making, research and innovation. The following statement is taken from the Ministers' communiqué (OECD, 1992, p. 35):

> "In general, the level of investment in research and development in education and training is far lower than in any other sector of comparable size. The potential of educational research as an integral element of improvement remains largely underdeveloped, whether at the national, regional or local level. Traditional academic research has its own special part to play. More important still, much research and development needs to be grounded in practice, involving staff and institutions, whether individually or collectively, in a constant process of diagnosis, comparison and analysis. To achieve this, experimentation and innovation should be given strong support."

Several points can be extracted from this statement. First, the potential contribution of educational R&D in improving policy and practice has not been fully realised; second, the Ministers express concern about the financing of educational research; third, the systems for educational R&D in the OECD Member countries are in need of restructuring, so that such funds as are available can be most effectively used. The statement also raises a number of pertinent questions. Foremost among these is: Why has the role of governments in the promoting and using of educational research come under critical scrutiny in the 1980s and 1990s?

There are several possible answers to this question. The main reason for the interest of governments in educational R&D relates to the recurring belief that knowledge is an

increasingly important factor in innovation and economic growth in the OECD area. Governments have an interest in ensuring that knowledge about education is produced efficiently and disseminated effectively. The Ministers' statement may be taken as an indication that the current organisation and practice of educational research may no longer suit the needs of the evolving knowledge-based economy. The strengthening of the national and international knowledge base for education and training policy is particularly important, given that major reforms intended to improve the quality and cost-effectiveness of education and training are under way in all OECD countries.

The new concern with accountability and the new contexts in which governments steer and finance their education and training systems are another part of the explanation for the heightened interest of governments in educational R&D. Steering by goals and standards rather than governing by rules and regulations changes the nature of the demand for information about education. In the new context, more and new information is needed about the outcomes of education and training policies, as well as evaluative information about the success or failure of innovations in enhancing performance. In steering and managing change toward the objectives deemed important in the new international setting, policy makers will need more R&D information, and also information of a kind not hitherto produced. This information, moreover, needs to be organised in a national knowledge base that allows for comparisons with international trends, issues and standards. What is required of this knowledge base in terms of content, orientation, structure and capacity for dissemination? Given that this knowledge base will depend crucially on the organisation and performance of educational R&D, how should governments go about promoting it, and how can they best collaborate? These are the questions which are asked, and which explain why the Centre for Educational Research and Innovation (CERI) of the OECD undertook a study of the role of governments in organising and promoting educational R&D.

Trends in educational reform: the general policy frame

This report attempts to demonstrate that R&D are essential prerequisites of good policy-making and practice in education. In charting the relationship between the pursuit of disciplined enquiry and creating a knowledge base, and the world of decision and action, the report constantly notes that both educational policy and practice, and reflective work on them, take place within a larger social, political and economic scene. If educational R&D responds to trends and fashions, those trends emanate at least in substantial part from change in the wider society, as well as from changes deriving from movement in the disciplines and knowledge rules of research. It follows, therefore, that those who wish to create research policy must first consider the general policy frame within which educational research resides or to which it needs to relate.

Over the last 50 years the educational policy landscape has changed immensely, as has the frame of public policy in general. More recently, in many countries government has strenuously reduced direct control over public institutions; complementing, and in instances replacing, professionally led bureaucracies, in which experts under elected control determine client needs, services have been privatised, or subjected to market

relationships, and public institutions have been required to enter into relationships with their clients which approximate as far as possible to those of the priced market sector.

Some systems that have hitherto been centralised have become decentralised; decentralised systems have become more subject to central control although that has not been deemed inconsistent with their conversion into market institutions.

For a long while now, the role of the professional in the welfare state has been questioned, starting perhaps with the attack on their authority deriving from the sociology of knowledge of the 1960s, but now subject, too, to the critique and potential disempowering of market mechanisms. Some educational administrators and teachers are trying to piece together a new professionalism. This will encompass the requirement to incorporate client views and wants into providing services to the point where clients become partners of the professionals.

Alongside decentralisation and the introduction of market principles and structures, there has been the phenomenon known as the "rise of the evaluative state" (Neave, 1988). Direct and regulatory controls are replaced or complemented by the normative influences intended in the making and publication of evaluative judgements. Governments have identified evaluation as a significant component in their strategy to achieve such key objectives as the control of public expenditure, changing the culture of the public sector, and shifting the boundaries in definition of public and private spheres of activity. Evaluation has been used, too, to install management criteria and expertise. With it has gone a particular culture of management based upon economic concepts of rationality. Central to it have been linear-rational or closed system models of decision making, "in which unambiguous objectives are established, action upon them flows in predictable ways through established implementation structures, outcomes are monitored against them and objectives themselves may, in consequence, be reformulated" (Henkel, 1991). That model, in turn, has come under question, not least in the wider research community which is questioning the belief that research application and utilisation are best defined as a linear process of discovery followed by application.

The modes of evaluation, too, have undergone sea changes. Whilst evaluation for self-development and by peers, and "illumination" or other forms of inner-directed and professionally driven evaluation, have not disappeared, many systems (*e.g.* Finland and Norway) are installing, at certain levels of the system, budgeting by results in which at least marginal amounts of resources are used as a reward (or punishment) for performance. Prior to this, however, there is the setting of objectives by those who sponsor educational activities. Evaluation has thus shifted, in certain countries, from *ex post* to *ex ante* formats. In *ex post* formats, professionals made a needs assessment, and if evaluation took place at all, it would be a judgement on the ultimate results. In *ex ante* evaluation, objectives are set ahead of the process, and judgements are made on those prior objectives.

Alongside other movements in evaluation has been its institutionalisation. A whole organisational complex of evaluators – inspectors, advisors, auditors, and consultants acting as evaluators – has grown up, each of them possessing a different form of authority and using different forms of knowledge and technical modes in their work.

Increasingly, governments are searching for ways to better target the work of these groups by subjecting them to market conditions.

As noted above, liberal notions of markets have found their way into the education and training systems of many OECD countries. The question thus arises whether it makes sense, and if so how, to apply the "free market" principle to educational R&D.

Markets for educational research

In a free market, each individual is supposed to optimise his or her own advantage. The policy assumption is then that the aggregate of individual decisions to buy and sell will create adequate services and goods through the mechanism of supply and demand, and will also ensure that new goods and services are developed by providers. To some extent the educational system might be able to operate on that basis. But for the most part, education cannot meet the conditions of the free market, for one reason because purchasers do not have the money at their disposal to use as they wish among the full range of goods and services. The providers, moreover, are not working to improve their own pecuniary position. The services being offered contain elements about which information is not likely to be available to many of the clients, sufficiently so that choice can be fully informed or even made. Many of the services are offered without very much direct client voice as to their nature. A more accurate description of such arrangements is therefore that of a purchaser-provider system which is usually underpinned by contractual obligations and relationships entailing requirements of cost, timeliness and quality (Cordingley and Kogan, 1993).

If the market were free to determine demand and the pricing of information and knowledge, then the production of such intangibles might become subject to the forces of demand and supply, and the efficiency – if not always the quality – of producing research knowledge might thus be enhanced. But the markets for educational services and knowledge production are imperfect. The price of research knowledge in education is not determined by the market but usually by governments. There are but few patents on scientific or technological innovations in education, and most of the knowledge is in principle freely accessible. Educational R&D is no priced commodity because there is no obvious way of determining a market price for existing research knowledge – for example, knowledge about models useful for designing a new curriculum in mathematics. Moreover, the growth of knowledge is not linear and steadily cumulative, and the costed inputs into it cannot easily be related to costed outputs.

Thus the markets for educational R&D are not only imperfect – because they lack information on prices – but they are also distorted, because the producers of research knowledge are also its principal consumers. Given that open and free access to the research knowledge produced by others is a primary requirement for the advancement of science, prices cannot be set and "inefficiency" results. There are also other sources of demand for research knowledge in education, such as governments and schools, but this demand is either limited owing to financial constraints or is brought to play in contrived

ways, thus causing a further distortion in the way the markets for educational R&D operate.

The values, language and form of the mechanisms of the market are beginning to permeate education, including research, but the structures and procedures of publicly provided services remain dominant. Thus it is fair to say, then, that the move to markets in educational R&D is shot through with ambiguity. This is because it relies on purchaser-provider arrangements which are not true "market" arrangements, although they do introduce the notion of contractual relationships, as in purchaser-provider splits. Such quasi-market arrangements constitute an important element of the pressures and rewards system to which researchers are subject. They are intended to shift academic behaviour from that encouraged by "traditional" conditions of employment in academia. The rewards, and the reciprocal pressures and sanctions, that affect R&D performance form a quadrilateral of potentially contending forces consisting of "psychic" rewards, social esteem, pecuniary rewards and academic prestige, and their opposites.

Until the expansion of higher education and R&D, reward systems – which varied considerably between countries – in the main worked adequately on the basis of rewarding by academic and social esteem and psychic rewards. The shift towards quasi-markets for educational R&D addresses certain problems which have been discerned under the new conditions. Uniform salaries and other rigidities may weaken the inclination to respond to changing social and educational needs. Quasi-market devices may create greater flexibility and responsiveness. They may make it easier to engage stakeholder groups in educational R&D agenda setting. They may also contribute towards greater internationalisation – a point which is considered more fully in Chapter 7.

But balances have to be struck between reward devices and some of the enduring institutional necessities. The principles that competition between researchers will sharpen motivation, and that the able and responsible should be rewarded, are not alien to existing academic arrangements. At the same time, continuity is necessary if research groups are to accumulate skills and knowledge and to build and sustain the networks that are a crucial factor in the dissemination and utilisation of research findings. These need not be neutralised by competition, but they could be weakened if quasi-market arrangements were in the hands of immature customers who looked for "quick and cheap" and immediately applicable rather than effective research commissioned through imposed contracts requiring a longer time span.

Arrangements differing from those of the free market have been described (Hirschmann, 1970) as "exit", allowing customers to seek alternative sources of supply, and "voice" allowing customers the right of complaint or criticism, but they also include "loyalty" which allows for the continuity amicable to the long-term development of concepts, methods and shared concerns.

A further point, specific to educational R&D, is that there are second-order benefits, such as the training of researchers and the use of research findings in the training of teachers and other educational personnel that takes place as a by-product of research in publicly subsidised institutions. Thus, a judicious balance between competitive and non-marketed arrangements is urged, whilst it is recognised that not all of the effects of institutionalisation are advantageous to educational R&D.

Implications for educational research

The relevance of the partial move to markets and related trends in policy and reform to educational R&D should be obvious. If central administrations no longer determine in precise detail what needs will be met, and if educational institutions increasingly must look to their "customers" as they shape their curriculum and ways of delivering teaching and learning, there is a displacement of the sources of knowledge. It no longer derives from the frameworks of relevance generated by educational professionals but becomes a more openly available commodity. Evaluation thus becomes a way in which the "customer" acquires the knowledge of services being offered. Might not knowledge then perform the same function as the price mechanism in the free market? The place of research in this schema is that it can inform needs analysis, that evaluation often requires the backing of research of one kind or another, and that it can provide information on which users can inform their choices.

Further tasks for research also present themselves. The shift in the way in which the government orders and controls education is itself a worthy object of study. Not much is known about the ways in which total systems change themselves, or of the effects of these changes in terms of the distribution of power and the quality of working lives within educational institutions. Nor is much known about the substantive outcomes of education, namely student learning and, in higher education, research.

Yet it is not and must not be assumed that all educational research is or should be contingent upon policy frameworks. The curriculum may be "a selection from the culture" (Lawton, 1980) and is to that extent socially determined, but there are many areas of "useful" educational research, areas of the curriculum – of cognitive and instructional psychology, for example – which are part of the perpetual agenda of work in these domains. And basic research, essential to the successful pursuit of applied research, emanates from intellectual curiosity rather than immediate contemporary concerns.

Educational research does, however, acquire at least a large part of its dynamic and importance from the fact that it seeks to reflect upon changes in society and the economy as well as from living and working in education, and is not a mere academic exercise undertaken by researchers to meet their own curiosity, worthy though that objective might be. It is this political base of research which reinforces the argument, advanced in this report, that it must be both good, disciplined enquiry, able to stand up to scholarly scrutiny, but also that its agendas must be socially negotiated. By "socially negotiated" is meant not only a set of dynamic relations between government, policy-makers, practitioners and researchers but also networks that facilitate communication between researchers and professional and community groups, publishers, the media and so on. Hence the concept of socially alert and socially responsive (including socially critical) research. As for governments, the changes in the agenda for reform explain why they appear to have revived their interest in educational research. As noted in the next chapter, while the "crisis of confidence" in the value of educational R&D seems to be over, high consumer expectations about what educational research can do to build a knowledge base for policy-making are building up again. Against the backdrop of accountability, the pressure

is on the research community to deliver. Chapters 2 and 3 below attempt to address the question of what "delivery" means.

In the OECD countries, the public research budget on which educational research crucially depends is growing only slowly or is being held constant in real terms. In a situation of slow or zero growth of public expenditure there will be severe competition for public research funds among the various sectors of science and technology. Whether educational research can compete successfully and maintain its standing and relative position on the priority scale of governments depends ultimately on its achievements. If the level of public funding for educational research has declined or lagged behind growth in other sectors of government-sponsored R&D – and there is some evidence that this has indeed been the case in several OECD countries – then there is probably something wrong. Perspectives on the value and usefulness of educational research are of course influenced by many factors, and some perceptions may be more accurate than others. But regardless of whether educational research actually deserves the poor marks it is often given, the fact that public funding is slow in forthcoming should be sufficient ground for undertaking a critical appraisal of the accomplishments of educational researchers.

The aims and design of the study

Educational R&D is expected to contribute new insights and a common knowledge base which should make it possible to decide future directions of the research agenda. In addition, it should also function as a repository of knowledge on which policy-makers and practitioners can draw. While educational researchers have produced new insights, they have been much less successful in synthesising this knowledge for application and action. Educational researchers tend to take a positive view of the development of their field and of their own accomplishments. But policy-makers and practitioners often take a different and more critical view. From their vantage point, the knowledge base produced by educational researchers is often criticised for being too fragmented, too politicised, too irrelevant and too distant from practice.

It is an open question whether or not this critical perspective on the nature and value of educational research is fully justified. What is clear, however, is that the uncertain reputation of educational research needs to be addressed and improved. But this can be achieved only if better connections are built between the various constituencies, which include but are not confined to scholarly groups, practitioner groups and knowledgeable persons in politics and administration. Aligning the interests of these constituencies will require a better understanding not only of what these interests are but also of how the research system operates, what its strengths and weaknesses are, and what can or cannot be done to improve the knowledge base for application and action in policy and practice.

Against this background, the aims of this study are:

- to assess the recent and emerging issues in educational R&D;
- to analyse the different issues and problems related to the creation and utilisation of educational research, taking into account the views of both the producers and the consumers of such research;

– to reflect on the lessons and implications for the role of governments in promoting the organisation and funding of educational R&D.

A critical study of the role of research in improving policy and practice can offer new insights and a better understanding of the options and limits of government action. With this mind, this study has involved work undertaken in three areas. First, the recent and emerging trends and issues in educational R&D in a group of OECD countries were examined by means of country reports and seminars specifically prepared for this purpose. Many valuable insights were obtained from the country reports drawn from Australia, Belgium, Denmark, Germany, the Netherlands, New Zealand, Spain, Sweden, Switzerland, the United States and the United Kingdom. These insights are summarised in a concise study contributed by Nuttall (1994). More recent perspectives on research policy and innovations in organising educational R&D are offered in the eight case studies presented in Annex 1. These case studies are based on material provided by the government authorities of the countries that have contributed most actively to the CERI study.

Second, issues and problems in the production and utilisation of educational R&D, and the connections among three principal stakeholder groups – practitioners, policymakers and researchers – were investigated during a series of joint international seminars focused on the experience of specific countries and regions. The first seminar took place in Washington, DC and was jointly organised by the CERI and the Office for Educational Research and Improvement (OERI) of the United States Department of Education (Huberman, 1994). The second seminar, which examined the experience of Norway and Sweden in a broad international perspective, was held in May 1993 in Sunne, Sweden (Kogan, 1995). This seminar was organised jointly by CERI and the Swedish National Agency for Education. The case of Portugal was examined during a special seminar organised in Lisbon in April 1994 by the National Institute for Educational Innovation of the Ministry of Education (Campos, 1995). The third and last international seminar, which focused on the position of educational research in Austria, Germany and Switzerland, took place in Vienna in October 1994 (Pritchard, 1995). The Vienna seminar was organised jointly by CERI, the Austrian Ministry for Education and Arts and the Austrian Ministry of Science and Research, with the full co-operation of the government authorities of Germany and Switzerland. The lessons and implications for the role of governments in organising and funding educational research were discussed during all seminars.

A third line of work involved the development and measurement of indicators of national effort in educational R&D. To this end the Secretariat collaborated closely with the Australian Council for Educational Research (ACER), which could undertake this work thanks to a grant made available by the Australian Department of Employment, Education and Training. The data presented in Chapter 4 of this report were supplied to ACER and the Secretariat by national experts involved in the statistical programmes of the OECD Directorate for Science, Technology and Industry, and the Directorate for Education, Employment, Labour and Social Affairs. A brief account of the methodology used for the data collection is given in Annex 3. A full account as well as the complete set of data collected from the countries is presented in a separate report (McKenzie, 1995).

Finally, a small group of experts was convened twice to synthesise the findings of the whole study, which are presented in this report. Besides the input received from the

invited experts, substantial contributions were made also by the rapporteurs-general and, in certain cases, by the national delegates and discussants who took an active part in the preparation and proceedings of the three international seminars that were organised as part of this CERI study.

The structure of the report

This first chapter of the report has presented the statement of the problem and explained how the study was conducted. The next chapter examines some of the pervasive criticisms directed at educational research. This second chapter also describes some of the possible ramifications and implications for research policy. Chapter 3 presents an analysis and interpretation of what might be understood by the term "educational R&D". Chapter 4 describes the current position of educational research in a group of OECD countries, using several indicators of R&D finance and staffing. Chapter 5 discusses how educational research relates to policy and practice and how these relationships might be improved. Chapter 6 considers what the knowledge base in education is and could be like. What are the interests of the various constituencies and how can these interests be better aligned? The last chapter presents a summary of the main challenges and describes the options for government policy. Taken together, these chapters provide an up-to-date view of the issues and prospects for educational R&D, and point to the issues that will occupy the attention of researchers, policy-makers and practitioners through the remainder of the decade and well into the next century.

Chapter 2

Issues and Problems in Educational Research

This chapter discusses the main criticisms that are levelled against educational R&D. Of these, lack of communication between the producers and consumers of educational research is a recurrent theme. Chapter 5 presents several models of communication, which offer a basis for a discussion of ways to improve the communication among the three constituency groups – educational researchers, policy-makers and practitioners. But before turning to this analysis of the "three cultures" and their uneasy relationships, it is necessary to paint, with broad strokes, a picture of the developments that have led, in many OECD countries, to a perceived "crisis of confidence" in the value of the knowledge base produced by researchers.

The origins of the "crisis of confidence"

The general picture of national interests in educational R&D is that of slackening, if not decreased, support after the optimism about the power of knowledge evinced in the 1960s and first half of the 1970s. The reasons are manifold. First, confidence in the quality and relevance of educational R&D weakened as those countries which invested quite considerable sums in earlier decades in their education systems found that they remained incapable of solving all of the many problems placed before them.

During the 1950s and 1960s there was a firm belief in what social and educational research could do in providing the scientific and pragmatic basis for the solving of concrete problems – knowledge that could be used in the framing of better public and educational policies. This linear and functionalist interpretation of the role of social science research in producing facts and applying knowledge in problem-solving offered a rallying point around which positivist and quantitative research attained legitimacy. Confidence in the capacity of positivist research to produce facts that could elucidate the policy implications of broad changes in the relationships between education, the labour market and the economy ran high during the 1960s.

By the mid-1960s it had become clear that the OECD countries faced similar problems in developing and expanding their educational systems, for example problems concerning the satisfaction of individual and social demand, and achieving equity, the

planning of resource allocation, and particularly the development of the scientific and technical manpower needed in order to sustain development in modernising economies. Because many of the questions were identical, the result was a degree of similarity even in the orientation of the research programmes that were developed at that time. Recognition of this commonality led to a demand for the international dissemination of research findings. In turn this led to the creation of common research programmes and the establishment of international platforms for research collaboration. The Centre for Educational Research and Innovation (CERI), which was established at the OECD in 1968, is a good example of an institution founded to promote co-operation in this area of research and policy.

In an early CERI study, Eide (1971) examined the role of research in the planning of social policy. A central consideration then was whether educational research should provide technological prescriptions or whether it should concentrate on the restatement of problems and the formulation of policy options.

Another study assessing the position of educational research and its relationship to policy was conducted a few years later (OECD, 1974). The main themes of the survey were the goals of educational research, its relationship to practice, and the part research plays in decision-making. The study noted that considerable difficulties were encountered in preparing the survey, notably because the institutional status of educational research had remained uncertain in the majority of countries. The survey also identified two basic issues in the development of an effective relationship between educational research and policy. The first was that an unambiguous relationship between R&D was often lacking. The second issue was the obvious lack of a clear, linear relationship between educational research and policy-making.

The general inability to appreciate the implications of these issues – which, incidentally, could not be presented in such terms today – led to a gap between high expectations and promises, and frustration with the actual performance of educational researchers (Goodwin, 1975). Thus, disappointment and debate replaced some of the previous stability and enthusiasm. In the course of this debate a heated discussion sprang up about the nature and proper role of social and educational research. The ensuing *Methodenstreit* or paradigm controversy – terms which refer to the often bitter disputes among academics about the validity and usefulness of competing theoretical and methodological frameworks in the social sciences – led to drawn-out quarrels, which gave educational research a reputation of being fragmented and politicised. This state of instability and disarray, which lasted for several years, did little to keep up consumers' faith in the trustworthiness and applicability of the knowledge and insights produced by the various camps of educational researchers. And so, by the mid- and late-1970s, a general "crisis of confidence" in educational research had become apparent in a number of countries. This dismal state of affairs affected especially those countries where educational research had previously received substantial public support – for example Australia, Canada, Germany, the Netherlands, the United Kingdom and the United States.

It is not surprising that many countries found it difficult to continue the same level of support for educational research, given that almost all faced severe budgetary con-

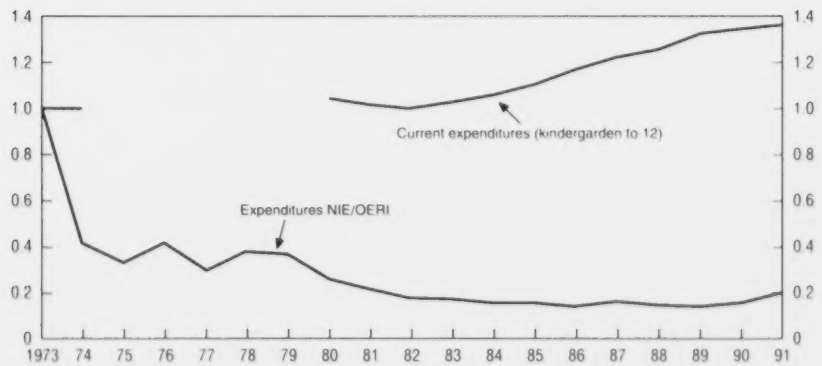
straints. It is the resources allocated which most rigorously denote the level of interest, and they did not keep pace with general educational and other public sector expenditure.

As Lowe (1989) has noted, the decline of research-based authority coincided with the emergence of the action research and participation movement which "in combination with the tendency of policy-makers to depend on commonsense judgments (...) and (...) *ad hoc* planning (...) further reduced the scope for systematic policy-oriented research". As a result, educational research "is under-funded and under-used".

Lastly, many countries now use forms of knowledge which compete with R&D as the knowledge base for decision-making. Audit-style evaluation, with its concentration on discernible outcomes, and education statistics and indicators, are among such examples.

Recently, however, there are signs of a revival of interest throughout the OECD and in individual countries. The OECD Ministerial meeting held in 1990 (OECD, 1992) agreed on the importance of strengthening educational R&D. Some countries have undergone systematic reviews of their underlying policies: Australia, Germany, the Netherlands, Sweden, Switzerland, and the United Kingdom (where the Economic and Social Research Council – ESRC – is principally concerned with educational research). In the United States, recent moves towards the adoption of voluntary national educational standards is some evidence of renewed faith in the power to advance social and educational ends. The US Government has recently undertaken a searching review of its

Figure 2.1. **United States: funding for commissioned and field-initiated research administered by the National Institute of Education (NIE) and the Office for Educational Research and Improvement (OERI), 1973-91** (in 1990 constant US$)



Note: Constant dollars indexed to 1973.
Source: US National Academy of Sciences (1992, p. 96).

21

research strategies prior to funding a newly strengthened system (see Case Study on the United States in Annex 1). There are, too, the explicit statements concerning the power of education to restore the economy made by the Finnish national authorities in their recent policy review of higher education (Finland, Ministry of Education, 1994), and they fund educational research accordingly.

Regaining lost confidence is difficult and takes a long time. From about 1975 there began a gradual slide in the public funding of educational research in a number of countries. Figure 2.1 shows the extent of the decline in the funding of educational research and development in the United States. The data leave little room for misinterpreting the trend. What is of interest, however, is not only the degree of decline, but also what might be the beginning of the upturn in the late 1980s. In the United States, around 1987, there was a noticeable increase in the amount of public expenditure on the knowledge base of education – primarily research and development on statistics and indicators.

Perceived problems

Above it was noted that the general decline of funding for educational R&D seems to have halted in a few OECD countries. It is not certain, however, whether this change is due to an improvement in the relationship between policy-makers and researchers, or even that the former have qualified their critical perception of much educational R&D as being too fragmented, politicised, irrelevant, and too distant from practice. Perceptions of the problems besetting educational R&D may have been influenced by national studies of the value and utility of educational R&D undertaken in the late 1980s and early 1990s (McGaw *et al.*, 1992; Germany, 1994; Sweden, 1993; Swiss Science Council, 1993; US National Academy of Sciences, 1992; Kloprogge *et al.*, 1994). These reviews and accompanying studies undertaken by academics (*e.g.* Finn, 1988; Kirst *et al.*, 1991; Gage, 1991; Kaestle, 1993; Härnqvist, 1994) were triggered by political changes that led to struggles over the future directions of research, for example in the case of the re-authorisation of OERI in the United States, the replacement of the National Board of Education by the new Agency for Education in Sweden, and the review of the mandate of the Institute for Educational Research in the Netherlands. These reviews and studies have identified several generic problems that appear to limit the value of educational R&D:

- *Fragmentation:* political agents, policy-makers, practitioners and educational researchers often operate at a long distance from each other. Educational researchers are moreover divided in their views on many important issues. The result is fragmentation, incoherence and often also politicisation.
- *Irrelevance:* in some countries the relatively low rate of public funding per educational researcher employed in the university sector is seen as evidence that the work these researchers do is irrelevant from the point of view of other important constituencies such as the government, the higher education sector and the practitioners.
- *Low quality:* it is often claimed by critics that much educational research, both that of a qualitative and quantitative type, is of poor quality and cannot stand up

to scholarly scrutiny or the conventional requirements of validity and reliability. Part of the problem is that the resources are spread very thinly and without much advance planning and co-ordination.

- *Low efficiency:* crude outcome indicators give a disturbing picture of low productivity in educational research in some, mainly European, OECD countries; for example, the ratio of university professors and other academic staff in education to doctoral students who successfully and within a reasonable time submit dissertations is low, while academic output in terms of scholarly publications is also often seen as falling behind expectation.
- *Low utility:* there is a long-standing perception that the findings of educational research have limited applicability in policy and practice, not only because much research is seen as irrelevant, as was mentioned above, but because the results are poorly disseminated to other constituencies, using modes of communication that do not lend themselves to practical consideration.

These generic problems were mentioned also in the country reports submitted to the Washington seminar (Nuttall, 1994). The list of perceived problems limiting growth in educational R&D – noted in the case studies included in Annex 1 – is also long and intractable. They can be inventoried as follows.

Funding

- consequences of reduction in the funds available for educational research:

  - financial and organisational problems for research centres and institutions
  - increased competition and market failures in educational R&D
  - reduced inflow of talented young researchers
  - uncertainty about the research agenda for the near future and therefore problems in stating the course to be followed.

Planning and government

- poor co-ordination and segmentation; R&D thinly spread; lack of continuity in research efforts;
- poor product specification as a result of ambiguity, especially in federal countries, as to who is responsible for defining educational goals and agendas and priorities for R&D;
- poor management of quasi-research markets, resulting in inefficiency and imperfect competition among researchers;
- little planning for training researchers or for dissemination;
- (from business community) poor prioritisation.

23

Communication and appreciation

- mutual misunderstanding between government and researchers; appreciation of expertise needed;
- lack of support from government or institutions which demoralises researchers;
- administrators and practitioners regarding it as irrelevant; researchers believed to neglect practical problems;
- constraints on publication made by some governmental sponsors;
- difficulty of discovering research objectives of government departments;
- devaluation of educational expertise as being politically biassed.

Quality

- projects aimed at improving education tending to be minor studies;
- research being provincial and not informed by international experience; poor state of comparative education.

The reactions to the crisis

Not all problems are experienced in all countries. Surely all of them are corrigible, and downward spirals can become virtuous cycles. Poor communication and low appreciation may result from poor planning, and poor quality be reinforced by low levels of appreciation and imperfect competition. Such problems can be identified by sponsors, perhaps, acting on the judgements of peer reviews and external assessments, and be tackled co-operatively by sponsors and institutions.

As it is, there have been various reactions to the crisis of confidence on the part of the consumers of educational research. The reactions have not been universal but the general trend has been for governments to allocate research funds more sparingly and, where resources were spent, to institute or strengthen various control mechanisms that would, it was hoped, offer better assurances that high-quality and relevant products would be forthcoming. The share of research funding devoted to applied research increased in certain countries, and even in the case of the funding of more fundamental research there was a clear increase in the commissioning of such research by competitive bidding. Some countries moreover created a capacity for conducting research either within, or closely connected with, their own administrations, and others established R&D institutions that were fully or partly independent of the academic environments associated with the university sector. These trends of course weakened the institutional basis for conducting educational research in the university sector.

The slow-down or decline in the level of public funding for educational research had come at a time when many universities had already upgraded – or were in the middle of a process of enlarging – their academic staff in the field of education. The result was an increase in the competition for funds. Competition increased further because educational

R&D centres were established outside the university sector. Such centres usually engaged little in teaching, administration and related activities and were often more competitive than the traditional university departments of education. Increased academic competition, reduced access to research funds and, in some countries, a deteriorating infrastructure for research brought to light further problems, especially in the university sector. For example, social and academic esteem were threatened, which deepened the sense of malaise among many researchers. In some countries, for example Australia, France, Germany and especially the United Kingdom, researchers felt increasingly marginalised and distanced from both political and practical action. This marginality led to mainly two courses of action. One was for researchers to insulate themselves even further from government policy and school practice, perhaps by engaging in historical studies or critical research. The other reaction was for academic circles to seek ways of turning the tide. Accordingly, researchers turned to new topics for investigation, topics that were deemed to be of interest to other constituencies. The upsurge in studies, during the 1980s, of school effectiveness and school improvement, or the newly found respectability of policy analysis, are good examples.

In the group that turned to policy analysis there were those who initiated systematic studies of the relationships between educational research, education reform and school improvement. Husén (1984), for example, discovered through interviews with policy-makers that the crisis of confidence was caused to no small extent by an overselling of the researchers' products. Researchers, but also many policy-makers, believed in a linear relationship between quantitative research, reform planning and improved practice. Since then, the work conducted by policy analysts has discredited this perspective (Nisbet and Broadfoot, 1980; Weiss, 1982 and 1989). The view most widely held today is that the linear model of research utilisation is fundamentally flawed, and that educational research findings can only very seldomly be applied directly in practice (see Chapter 6 for a full critique of this model). Other findings also argue in favour of a more humble view of the role of educational research in improving policy and practice. Educational researchers should understand, for example, that they cannot play a decisive role in the setting of policy goals, because such goals are central to a particular ideology which guides the actions of decision-making bodies. Another issue is that researchers should be very careful in making presciptions; neither should they pretend to play the role of social reformers. If educational research cannot decisively influence the setting of policy goals, then it can even less influence the direction of educational reform. Another insight contributed by policy analysts is that reforms cannot be brought about overnight. It takes a long time for new policy to take effect in schools and classrooms, but it takes even longer for educational research to change practice.

Because educational research very seldomly produces insights that can be readily applied in the markets for goods and services, adherence to the belief in the linear research model was bound to lead to trouble. Opposition to the linear and utilitarian perspective mounted during the 1970s, when researchers increasingly turned to "qualitative" or "interpretative" methods. Action research, ethnography, discourse analysis and other hermeneutical and phenomenological approaches to policy research became increasingly popular among a growing number of researchers, who did not share the basic tenets of the functionalist interpretation of the relationship between educational

research and decision-making. The resulting increase in the legitimacy and the frequency of use of interpretative methods was one of the main events in the history of the social sciences during the latter half of the 1970s.

During the 1980s, once the inadequacy of the linear model of R&D had been established, the debate gradually shifted to the ways in which the potential contribution of research could be realised. The main questions were similar to those asked by Eide (1971) more than a decade previously: How can the needs of the government and the practitioners be best met? What role can or should educational research play in helping the government and practitioners plan and assess educational policy?

When the national delegates of OECD countries met in Washington, DC in June 1992 there were some signs that the crisis of confidence in educational research was being resolved, as dialogue among the stakeholders was being re-established. But, as Nuttall (1994) observed, although there was reason for optimism the plight of educational R&D was still real:

> "Many of the trends identified (...) point to a state of good health for educational research, but some of the more significant ones (dwindling funds, a still unsatisfactory relationship between research, policy and practice, and a dearth of basic research) indicate malaise, and justify earlier use of the phrase the 'plight of educational research' rather than the more neutral 'state of educational research'. There are positive signs from most (but not all) OECD countries that the malaise is recognised not only by the research community but also by the funders of research, and that some steps are being taken to improve the position."

A common diagnosis is that a multiple strategy is needed to address the problems associated with low quality, low efficiency and low effectiveness. There is general agreement that accountability and quality-assurance mechanisms need to be put into place. There is, however, less agreement on what these mechanisms are and how they should be used. For example, should quality indicators be obtained through self-evaluation, reviews among peers, or external assessments, and how should these indicators be linked with an incentive system? A related issue concerns the elements of a strategy for enhancing the effectiveness of educational research in offering insights for policy and practice.

The "crisis of confidence" in educational research may thus be seen not as a destructive force but as having served a useful purpose in bringing about change. It has provoked self-evaluation and critical reflection in the research community. It has also stimulated governments to examine ways to make the research system more efficient and effective in contributing to the knowledge base for policy-making and practice. The outcomes, however, depend to a large extent on whether they can improve communication, so that the distance between the three communities can be reduced. The issue of communication will be returned to in Chapter 5. In turn, this depends on which perspective is taken regarding the role of the researchers *vis-à-vis* the policy community and practitioners.

Conclusions

In the late 1980s and early 1990s, several countries undertook government-sponsored studies of the role and position of educational research. These studies have helped to provide new insights into what educational research can do, and what not, thus offering a basis for improving understanding and the connections among the "three communities" – the policy-makers, practitioners and researchers. But the persistence of low funding levels can be seen as an indication that there still exists a climate of doubt about the usefulness and relevance of educational research. This attitude originates not only in the uneven quality of much research but is also influenced by problems of co-ordination and insufficient attention to research dissemination and reporting. This makes it difficult to raise additional funds, because policy-makers are not always convinced that more money will have the intended effect on school development and innovation.

The case studies in Annex 1 mention several ways in which countries have recently sought to strengthen the innovative capacity of their R&D systems. But before turning to an analysis of these innovative approaches to organising educational R&D, the question of what educational research is, and what it is not, must be addressed. This is the subject of the next chapter.

Chapter 3

What is Educational Research?

In examining the educational R&D systems of the OECD countries, it should be borne in mind that there is no agreement at the international level about the precise meaning of the term "educational research and development". The purpose of this chapter is to review the evolution and main characteristics of the field, paying attention to the nature of knowledge, the nature of research, and the disciplinary status and position of education as a field of scientific study. Towards the end of the chapter a definition of educational R&D is proposed.

Research and the nature of knowledge

There have been, in the main, two views of the nature of research in education and the kinds of knowledge it yields. Political authorities and some researchers working with them have expected the social and behavioural sciences to produce knowledge that is independent of context, that may be generalised to many situations, and that is neutral with respect to social values. Along with this expectation, a distinction has been made between the production of knowledge and its application in a linear fashion to the solving of problems. In this view, researchers would produce knowledge that policy-makers, administrators, school leaders and teachers would apply, in a linear fashion, in policy and practice.

In contrast, school leaders and the teachers themselves have often adhered to the opposite view, namely that research has very little to contribute in terms of decision-making in the classroom and school and the improvement of actual educational practice. Relevant knowledge is a product of reflective practice; it is dependent on context, is particularistic, and is related to specific social and personal values. Applicable knowledge, in this latter view, is therefore locally embedded knowledge arising from reflection on experience and the art of practice.

The relationship between knowledge production and knowledge use is problematic. In this context it may be helpful to consider knowledge production and knowledge utilisation as a continuum by which different types of intellectual activities can be described. Researchers, scientists, teachers, administrators and policy-makers all produce

and use knowledge. The knowledge available to the practitioners and decision-makers at various levels in the education system, therefore, results not only from research. Insights derived from experience and from the knowledge produced by reflective practitioners can offer an important basis for decision-making. Another significant contribution to the knowledge base is derived from administrative programmes, such as monitoring and evaluation programmes initiated at various levels in the education system. Education statistics and indicators constitute a further important element of the knowledge base.

However, from the viewpoint of educational research there is a marked distinction between the activities of researchers and those of teachers, administrators and policy-makers. Whereas the latter are concerned with solving problems encountered in educational practice, in administration, and in educational reform work, the research workers exist in another social and institutional context. The very nature of research and scientific discourse both liberates and limits the activities of researchers compared to other knowledge-producing agents. The nature of the knowledge researchers contribute to the knowledge base depends on the conceptual frameworks employed in the disciplines as well as on the critical attitude of science.

Yet educational research cannot deliver the kind of independent, authoritative knowledge that directly suits the needs of educational policy-makers and practitioners, except when it limits itself to quite narrow fact-finding exercises. It cannot decide normative issues, which severely limits its ability to procure a consensus on practical questions. However, there are significant research contributions to the processes of decision-making and consensus-building. It is in the very nature of research to raise more questions than it can answer, or to seek to answer questions that have not been formulated yet. Thus, although research can expose a complex and contradictory set of issues, it is unable of itself to lend them operational reality.

The fact that educational research cannot come up with uniform and authoritative answers to practical problems does not mean that it is unimportant or that social and educational research has nothing to contribute. Research provides tentative knowledge that may be informative, advisory and problematising in terms of the issues faced by policy-makers, administrators, as well as practitioners. Often the problems it identifies and finds concepts and vocabulary for become clear and salient in the policy arena some years after researchers identify them. Research also, importantly provides a critical challenge to many conventional or commonsense beliefs and practices. Indirectly and sometimes insidiously, it thus becomes important and relevant to practical and political activities.

Even if the knowledge produced by educational research does not, as a rule, independently and authoritatively sanction certain forms of educational practice or political decisions, it may well establish, systematise and analyse knowledge about, for example, the school as a social or economic institution, the teachers' working situation, learning processes, and the wider relationships between school and society – provided the knowledge and insights are verifiable. Educational research, therefore, is a means of converting financial capital into a human knowledge base, but the production process is decidedly unlinear and the benefits uncertain. Research knowledge can contribute to the development of competence and can enrich and balance the attitudes of professionals involved in

decision-making and educational practice. In a knowledge- and research-based society, answers do not come easily, but decision-makers and problem solvers will continuously get better arguments to shed light on the issues before them, which will enable them to better define the issues and hence make better choices.

The inherent indeterminacy of educational R&D as a producer of operational solutions is reinforced by its changing disciplinary structure. There has been a shift from unidisciplinary to multidisciplinary and domain-based studies, which both results from and leads to new modes of knowledge integration. These changes make the linear and social engineering models of R&D even less convincing. To some extent these changes are offset by new organisational structures and allocations of responsibility for research. With targeted and negotiated research comes less emphasis on disciplinary research as an exercise of individual researchers' preferences (Nybom, 1995). Taken as a whole, such structures are unlikely to produce universal, nomothetic knowledge, legitimising political or educational decisions and other practical solutions. Research can, however, provide impartial knowledge that may clarify or support arguments in favour of certain political decisions or practical solutions. Research may also contribute to establishing a coherent yet always tentative conceptual framework that places the school and the education system in a social perspective.

The disciplinary orientations of educational research

Educational research is aimed at understanding certain fundamental relations such as structures, processes and contexts involving human learning and development. Systematised and generalised insights into the types of activity bound up with learning relations and other formative human processes are at the core of the knowledge base for education. The term "formative processes" must be given a wide meaning, including education itself as well as the production and transfer of knowledge. As a field of study, education also nurtures mutually beneficial exchanges with other fields including psychology, sociology, philosophy, anthropology, economics, media studies, political science and history. Educational research has brought forward much knowledge, some of which must be deemed highly sophisticated. In turn, this knowledge base offers certain premises for practical action.

A central purpose of educational research is to develop and transfer knowledge and insights about learning in relation to political, sociocultural and economic-frame factors, which call attention to the processes of enculteration and socialisation. Socialisation in this context refers to the process by which a child becomes a fully fledged participant in a family, community and society. Hence, socialisation is also about how the individual moves from a state of utmost dependence and lack of identity towards an ever increasing awareness of itself as a human being, at the same time becoming a participant in increasingly larger and more diversified social contexts. The formal aspect of socialisation is the purposeful and planned influence brought about by education. However, socialisation also involves informal and casual aspects that both facilitate and constrain the learning relations in a society.

Educational research is therefore not limited to questions such as: What should the individual learn? What is the individual going to learn in its environment? Or, what is the individual able to learn if subjected to instruction or training? Educational research should also strive to clarify the learning needs of individuals, what is actually learned in different environments and the complex interrelations between these environments and learning. Thus, educational research, by focusing on the socialisation process, involves the disciplined study of learning relations at several levels, including those of the individual learner, institutions and organisations, and the wider sociocultural, economic and political environments of societies.

Socialisation may be viewed as a type of interaction process in which society "takes on" the individual, while at the same time the individual, in a certain sense, "takes on" the society. From the point of view of the individual, it is paramount to get to know social interaction patterns and the prevailing ways of thinking in society in order to be able to lead a meaningful life. This would mean getting a job, and carrying out one's work in a satisfactory manner. However, such "social competence" is also important in order for individuals to be able to shape their lives within an acceptable social framework and to develop their potential of independent, critical human beings who, at the same time, can adapt themselves to social laws and norms. The principal issues in socialisation therefore concern the development of insights and the acquisition and transfer of knowledge, as well as adaptation, reproduction and social control.

Because the learning relations considered here are linked with external conditions that change with time, educational researchers are constantly confronted with new tasks and challenges. This perspective leads educational research to consider learning relations at several levels of analysis:

- At the macro- or societal level, the focus is on the overall social, cultural, economic and political premises that tend to define the competence requirements in a society.
- At the meso- or structural level, educational researchers study how learning relations are structured or arranged in addition to how knowledge is produced and selected.
- At the micro- or operational level, researchers concentrate on the activities, interactions and behaviours of the individuals themselves.

Educational research also functions in historical and comparative dimensions and through complex relations with educational theory. This multilevel conceptual framework invites educational researchers to develop their work on the basis of quite divergent perspectives. The point of departure may be the actual learning of the individual, the formation of identity, and personal development. It may also comprise the development of cultures or cultural elements, on the basis of which the individual would strive to master certain skills. It is for this reason that education as a field of study may be organised around related disciplinary orientations: educational philosophy, educational history, educational psychology, economics and sociology of education, or around cross-cutting perspectives as, for example, in pedagogy, the curriculum, educational governance and management, etc. Hence, educational research, which comprises research on institution-based learning in kindergartens, schools, universities, and adult education

centers, as well as research on the informal and non-formal learning of children and adults, clearly has a multi- or cross-disciplinary basis. Psychology and social psychology focus on learning and learners. Sociology and anthropology concentrate on cultural contexts of teaching and learning. Sociology, political science and economics focus on interactions and their influence on students and institutions. Social policy, administration, law and economics study systems. Philosophy is primarily concerned with meanings, intellectual relations, purposes and the ethics of educational practice. Within and across these disciplinary orientations, educational phenomena can moreover be approached from various theoretical perspectives, including structural-functionalism, systems theory, post-structuralism, and interpretivist and critical theory perspectives. Building on these perspectives, researchers then adhere to different epistemological perspectives, which translate into rational and empiricist, positivist and antipositivist positions *vis-à-vis* the choice of research methodology.

Paradigms in educational research

Unlike mathematics and medicine, educational R&D does not have a long history. It is true that great educational thinkers have played an important role at different points in time, as for instance Plato and Aristotle in the antique world, and Comenius, Locke, Rousseau, Pestalozzi, Dewey and others after the Renaissance, in the Age of Enlightenment and in the emerging democracies after the French and American Revolutions. But they were all essentially normative thinkers; their main question was: What should be in education? This tradition of thinking has continued uninterruptedly until the present time; simplifying it a little, one might say that this tradition is associated with what is now variously called the humanistic or critical paradigm of educational research. This paradigm "derives from the humanities with an emphasis on holistic and qualitative information and interpretative approaches" (Husén, 1985). This approach is also associated with hermeneutics and critical philosophy. It tries to "understand", whereas the second main paradigm in educational research tries to "explain".

The second paradigm emerged toward the end of the nineteenth century and is linked to the breakthrough and the spectacular success of the natural sciences. Under the influence of positivism, researchers in the behavioural and social sciences made an attempt to import the epistemology and methodology that were prevalent in the natural sciences. At that time, education was generally considered not as a separate field of study but as a branch of experimental psychology. It was believed that a science of education could be built on such foundations. Thus, the positivist paradigm of educational research is modelled on the natural sciences with an emphasis on empirical, quantifiable observations. In this view, "the task of research is to establish causal relationships, to explain" (Husén, 1985). The main questions to be answered in the context are: What is in education? Why is it as it is?

Educational research in the twentieth century has been characterised by an uneasy coexistence of the natural science or positivist paradigm and the interpretative, humanistic, hermeneutic and critical paradigm. At first the two perspectives were seen as antithetical and mutually exclusive. As has been seen, the positivist perspective was dominant

for a long time, but faced a crisis of confidence toward the end of the 1960s, at a period when the humanist and critical traditions gained recognition. However, this shift in the epistemology of educational research was not free from conflict. Open hostility between the proponents of one or the other perspective was noted frequently. Because the two positions were often seen as irreconcilable, and conflict resolution was deemed by many to be impossible, there developed a tendency for the two groups to simply ignore each other. This practice still exists, although the sharp edges of the debate have worn with time. Today, many researchers consider that the two paradigms can most productively be seen as complementary. A consensus is emerging that there is a need for pluralism of approaches to educational research, the latest position being even, in Lamomski's phrase, "beyond paradigms" (Lakomski, 1991). In this holistic view, there is both "good" and "bad" positivist research, as well as "good" and "bad" qualitative research, depending on the problems investigated.

A definition of R&D

For the time being, there is no generally accepted definition of educational R&D, nor any agreement at the international level about the precise meaning of the term "educational research". There are, however, numerous definitions that have been adopted by different bodies, mainly national educational research associations.

An international standard for defining an R&D activity is offered by the *Frascati Manual* (OECD, 1994). This manual covers basic questions about the definitions of R&D, and the conventions associated with their use. The manual, which is named after the place in Italy where it was first adopted 30 years ago, has been written by and for the national experts in Member countries who collect, publish and use national R&D data, and who aggregate and submit such data to the OECD and other agencies. The *Frascati Manual* is oriented to the collection of data on national resources allocated to R&D activities as a whole. It provides less direct guidance on specific fields of R&D, especially those in the social sciences such as education. However, the manual provides an internationally accepted methodology for measuring an R&D activity. The manual defines this term as follows:

> "Research and experimental development (R&D) comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications."

The key distinguishing characteristics of R&D as defined by the OECD are originality and investigation as a primary objective. Research and development ends when the work is no longer experimental or investigative. Once the activity has become routine and has moved beyond the developmental stage, it is no longer defined as R&D. The manual moreover defines R&D as comprising three main activities:

> "Basic research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundation of phenomena and observable facts, without any particular application or use in view.

Applied research is also original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific practical aim or objective.

Experimental development is systematic work, drawing on existing knowledge gained from research and/or practical experience that is directed to producing new materials, products or devices, to installing new processes, systems and services, or to improving substantially those already produced or installed. In the social and behavioural sciences, experimental development is defined as the process of translating knowledge gained through research into operational programmes, including demonstration projects undertaken for testing and evaluation purposes."

The manual lists a large number of activities that should be excluded from the definition of R&D:

- education and training;
- other related scientific and technological activities;
- other industrial activities;
- administration and other supporting activities.

Two of these exclusions pose particular problems for educational R&D. The first is that all activities involving specialised non-university or university-based tertiary education correspond broadly to education and training as defined in categories 5, 6 and 7 of the International Standard Classification of Education (ISCED). But conceptual issues arise because there is, for example, a fine line between the training of research workers and their role in conducting or assisting in research studies. The second exclusion that poses difficulties to educational R&D is the exclusion of the other related scientific and technological activities. This means that technological innovations implemented, for example, in classrooms, libraries and museums are excluded, as well as activities such as the regular collection of statistics on social, educational and economic phenomena.

According to the *Frascati Manual* (p. 33), "the basic criterion for distinguishing R&D from related activities is the presence in R&D of an appreciable element of novelty and the resolution of scientific and/or technological uncertainty, *i.e.* when the solution to a problem is not readily apparent to someone familiar with the basic stock of commonly used knowledge and techniques in the area concerned". Critics of educational R&D may with some justification draw upon this clarification to argue that much of what is conventionally considered educational research and experimental development should not be classified as such, since much of what currently passes as educational R&D is neither novel nor original, and certainly can lay claim little in the way of resolving scientific and/or technological uncertainty.

The definitional issues are compounded because the field of educational R&D is of relatively recent origin and involves a variety of disciplines, both in universities and in specialised research institutes. While multidiscipinarity is an essential feature of educational research, it does also constitute a problem of identity. As was argued in the previous chapter, educational research cannot hope to "resolve" problems through the linear application of scientific or technological "solutions". By the standards of the

Frascati Manual, this must be taken to imply that education as a field of study is, at best, an uncertain discipline.

Toward a definition of educational R&D

In order to define educational R&D, it is first necessary to define education. The choice is between a restricted and a diffuse definition. A restricted definition will limit itself to those experiences derived from encounters with institutionalised teaching and learning. A more diffuse definition will include all of those educative experiences which take place before, after and outside formal educational frameworks.

Härnqvist (1994) notes that categories such as those proposed in the *Frascati Manual*, or the distinction between conclusion-oriented and decision-oriented research (Cronbach and Suppes, 1969), are relevant and cannot *a priori* be excluded from the definition of educational R&D. It is important to distribute the responsibility for various kinds of research among different actors, and also to distinguish clearly experimental development followed by evaluation, from informal and *ad hoc* developmental activities carried on in schools.

Definitions derived from the *Frascati Manual* are general but with a methodological bias in favour of explanatory research in the natural-sciences tradition. A definition of educational research as "disciplined inquiry" into topics related to education is more neutral *vis-à-vis* methodology and epistemology, and covers a broader range of science and scholarship (Cronbach and Suppes, 1969; Härnqvist, 1994). It implies that theories, methodologies and approaches of importance for educational R&D can be found in many academic disciplines, ranging from the humanities to social sciences and natural sciences.

Cremin (1979) has pointed out that education has often been too narrowly defined as equivalent with formal schooling only. He argues instead for a wider perspective, and coined the expression "ecology of education" to describe the range of agents exercising educative influences. Cremin defines education "as the deliberate, systematic, and sustained effort to transmit, evoke, or acquire knowledge, attitudes, values, skills, and sensibilities, and any learning that results from the effort, direct or indirect, intended or unintended". This is indeed a wide definition, not least because it encompasses both purposeful education as well as self-directed, open and experiential learning. This definition of education combines training in formal, institutional contexts, as well as non-formal and informal learning in other educative contexts such as the community, the family, the workplace and the media.

Cremin's definition has been subjected to criticism by those who feel that an all-inclusive definition neither advances understanding nor offers a basis for measurement. The main critique has held that education conceptualised so widely is identical with what anthropologists refer to as "enculteration" or sociologists as "socialisation". Earlier in this chapter it was noted, however, that a central purpose of educational research is to develop and transfer knowledge and insights about learning in relation to political, sociocultural and economic-frame factors which evoke the need to study the processes of enculteration and socialisation. This statement offers some support for a wide definition.

A wide perspective is considered helpful in describing both the historical development of education as well as the current complexity of educative processes in modern societies, where schooling, although a dominant agent in the total ecology of education, is no longer the absolute mainstay of learning.

Husén and Postlethwaite (1994) observe that in presenting scholarship in education, one has to exercise restraint and avoid including everything that shapes people. Typically, the editorial board of the second edition *The International Encyclopedia of Education* (1994) included representatives of political science and policy analysis, economics of education, anthropology, and sociology of education. This implies that much but by no means everything that comes under the heading of, for example, enculteration or socialisation can be dealt with under the general heading of education. The problems of inclusion and exclusion encountered in defining R&D derive from the same problems which beset the effort to define education.

Combining these definitions of R&D and of education might result in a general definition of educational R&D:

> Educational R&D is systematic, original investigation or inquiry, and the associated development activities that are undertaken in order to increase the stock of knowledge about education and learning and the use of this stock of knowledge to devise new applications or otherwise improve the deliberate, systematic, and sustained effort to transmit, evoke, or acquire knowledge, attitudes, values, skills, and sensibilities, and any learning that results from the effort.

However conceptually attractive such a diffuse definition might be, it would present considerable problems for measurement. For the purpose of developing indicators and collecting data about educational R&D to measure these indicators, a more restricted definition might be considered. For the measurement of indicators of educational R&D the following, more operational definition was applied (OECD, 1995*a*):

> "Educational R&D is systematic, original investigation or inquiry and associated development activities concerning the social, cultural, economic and political contexts within which educational systems operate and learning takes place; the purposes of education; the processes of teaching, learning and personal development of children, youth and adults; the work of educators; the resources and organisational arrangements to support educational work; the policies and strategies to achieve educational objectives; and the social, cultural, political and economic outcomes of education."

The breadth of the potential topics encompassed by these two definitions, and the range of academic disciplines that may be involved, suggest that education is best viewed as a multidisciplinary research field. The practical consequence is that educational R&D activities may be located in university departments or research institutions that are oriented towards fields other than education. For example, much R&D that is relevant to education will occur in university departments of sociology, psychology or economics. If this work were to be excluded from the definition of educational R&D, not only would the resources allocated to educational R&D be underestimated but, more seriously, important research functions and contributions to the knowledge base for educational policy-making and practice might be overlooked.

The Société suisse pour la recherche en éducation (1988), for instance, has adopted a functional delineation of the field of educational R&D which comprises the following five functions:

- *Analytical and explanatory* function: educational R&D observes, reveals and explains educational facts by analytical, empirical, hermeneutical or any other pertinent methods.
- *Synthetic* function: educational R&D establishes syntheses of scattered and fragmented pieces of research knowledge and thereby contributes to theory building and the establishing of a knowledge base for the educational sciences.
- *Evaluative* function: educational R&D offers scientific support and control to educational experiments and reforms.
- *Prospective* function: educational R&D, on the basis of given policy objectives, devises concepts and models for the future development of education.
- *Consultancy* function: educational R&D has consulting functions in educational planning and development processes.

Reaching maturity in diversity?

Although the history of educational research comprises only a little over 100 years, the field has nevertheless produced a series of impressive results which have entered the body of general knowledge and have also greatly influenced the development of education systems during the twentieth century. Some examples may illustrate these achievements of educational R&D:

- In developmental psychology, Jean Piaget has analysed the different stages of a child's cognitive development. This knowledge has greatly influenced thinking about the curriculum, and teaching and learning methods.
- In the economics of education, human capital theory and theories about endogenous development have shown the importance of education in economic growth. Efficiency and effectiveness in educational production have become cornerstones of educational policy.
- In the sociology of education, studies have demonstrated the role of education in reproducing social relations in society. Equality of access has subsequently become a key issue of educational policy.
- The sociolinguist Basil Bernstein has drawn attention to the fact that different social strata use different linguistic codes. This insight has been influential in the development of programmes for multicultural education, adult basic education and adult literacy.
- Cognitive scientists, including researchers in education, psychology, computer science, linguistics, neuroscience and anthropology, have expanded understanding of how thought and knowledge develop and interact. This understanding has provided important guidance to curriculum developers and instructional designers.

These are only a few of many examples showing that educational research conducted in a number of fields has enriched the body of knowledge relevant to educational policy and the practice of learning and teaching. However, the field as a whole has not yet succeeded in bringing together this knowledge in a coherent, systemic view linked to a set of important goals and objectives in education as, *mutatis mutandis*, is the case in the fields of science.

A brief comparison between education and economics brings out the differences in the state of development of the disciplines. Economic advisors coming from varying schools of thought will, for obvious reasons, give different advice to governments concerning possible solutions of practical economic problems. At the same time, however, there seems to have been a degree of consensus on what is called the triangle of objectives (*e.g.* monetary stability, equilibrated balance of foreign trade, and full employment; a fourth objective, economic growth, was added after the Second World War). This consensus has weakened in recent years, however, since, for example, there is no longer a firm agreement about the means and ends of achieving full employment.

In education, there is a firm consensus on the goal of achieving universal schooling. But the state of theory differs from that developed in economics, for several reasons. Education does not deal in discrete categories. Its analysis requires reference to factors that range from those of the individual psyche to the management of large-scale organisations. Whilst, for example, economists deal with categories that are precisely the concern of the central organs of government, educational R&D is concerned with issues and constructs that are far wider and diffuse and susceptible to alternative identifications at all levels of operation. Although there is some agreement about what the multiple functions of education might be, it is unlikely that there will ever be a complete consensus about which of the following functions might be dominant at any one time:

- personal development;
- socialisation;
- vocational qualification;
- allocation and distribution.

Knowledge transmission is part of all of these functions. It is also obvious that the goals underlying them can be in conflict. It is then a matter of educational policy to give more weight to some and less to the other functions. However, as has been argued previously in this chapter, the relationship between educational policy and educational research has not reached a point where advice from research to policy is always pertinent. This is, *inter alia*, also true for economic theory and economic policy.

In the brief description above of some of the early achievements of educational research, the contributions of individual scholars working within certain branches of the field were emphasized. Although individual scholarship will always remain important and essential, the focus on individual achievement is misleading. After the Second World War, the need for a new type of knowledge emerged, knowledge that was supposed to assist in rational decision-making by enlightened policy-makers. The call for decision-oriented or applied educational research led to an "explosion of research institutions" (De Landsheere, 1986). In fact, state-run educational research institutions were estab-

lished in many OECD countries, mainly between 1960 and 1975. Much of the work undertaken by these institutions has been of a decision-oriented and applied nature. Only a few of them, for example the Max-Planck Institute for Human Development and Education in Berlin, have resisted the call for decision-oriented activities and maintained a focus on basic research, albeit employing both positivist and humanist frameworks.

The 1960s and the early 1970s thus marked a new beginning in the history of educational research and was characterised by expansion and by the increased role of governments in the steering and funding of decision-oriented research. The establishment of the various state-run research institutions is a case in point. The hopes and promises which were linked to this investment in educational research subsequently could not all be fulfilled. As the next chapter shows, there are still serious shortcomings in the relationships between research, policy-making and practice. But, as Huberman (1994) observes, such a situation is not uncommon in the early stages of development of a scientific field: "Such applied fields as medicine, engineering and law have traversed the same identity crisis".

For many reasons, education again became a matter of keen political and economic interest in the late 1980s and early 1990s, and the question of the role of educational research has been taken up anew. It is significant to note that many OECD countries drew up – either shortly before or after 1990, and mostly for the first time in the history of the field in those countries – national reports on the condition of educational R&D. Convinced that there are enormous tasks in education and that R&D can contribute to the solution of part of the problems, the editors of these reports look forward to opening new perspectives for educational research.

The rejection of linear models of research utilisation is a common feature of these reports. In the United States, the Committee on the Federal Role in Education Research (US National Academy of Sciences, 1992) states the position succinctly:

> "The Committee does not believe that research provides simple solutions to the problems of educational practice. However, a sustained investment in research is an essential ingredient in an overall effort to improve education. Research has served and continues to serve several key roles:
>
> – Research expands understanding of the fundamental aspects of human development, learning, teaching, schools, and their environmental contexts.
> – Research points the way to the discovery of effective elements of curriculum, instruction, and school organisation.
> – Research provides the best basis for distinguishing worthwhile innovations and policies from fads.
> – Research assesses the status of education systems and their progress towards various goals."

Instead of the linear model, the Committee argued for the idea of "learning communities", *i.e.* "partnerships among researchers, practitioners and policy-makers, in which each becomes involved in disciplined inquiry and each contributes to the learning of the others" (p. 17).

Yet there is no denying that the potential of educational research in contributing to the development and improvement of education systems has not been fully exploited. This is a major limitation and weakness, given that the problems are both real and urgent. Not only do some problems continue to resist solution, but new problems and challenges are being added at a rapid pace.

Conclusions

While educational research is best considered as a young field in comparison with other disciplines on the natural, social and behavioural sciences, educational studies have nevertheless been undertaken for a long time. Progress in the knowledge base of education and in the usefulness of research to policy and practice requires an equilibrium to be found between the consolidation and synthesis of existing knowledge and the development of new ideas and insights.

Many ideas with pervasive implications were advanced in the 1980s – examples, given in no particular order of importance, are accountability, student choice, partnerships, school effectiveness, mass tertiary education and a resurgence of interest in lifelong learning. The fact that these ideas are currently being implemented in educational policy and reform in many OECD countries calls for these ideas and their implications to be thoroughly studied. Educational researchers must be alert and responsive to this need, even more so than in the past. This point will be drawn into sharp focus in Chapter 5, in which the problematic relationship between research, policy and practice is examined more fully.

Educational research is required to go down new avenues as a result of social change, but at the same time social change itself becomes an important object of educational research. There is a need, therefore, to orient the field towards the central problems, whether these be actual or perceived. As a problem-oriented field, education will ensure its social and political relevance. However, this problem-oriented focus does not preclude but, rather, reinforces the need for more basic research that is organised in terms of the development of theory and method.

Educational research – both fundamental and of a more applied type – is not static but must respond to problems that promote and are in their turn promoted by social change. Each country and each era have their own agenda, so that, for example, industrially based apprenticeship and other forms of training are prominent research issues in Austria, Germany and the Netherlands but not in some other OECD countries. Particular stakeholders in education also have their own agendas. The country reports prepared for the joint OERI/OECD international seminar held in Washington, DC in June 1992 (see Tomlinson and Tuijnman, 1994) testify to that. Moreover, the case studies included in Annex 1 reveal an extremely wide range of concerns spanning all levels of education and an equally wide range of era-specific and contemporary educational problems. Some issues would have not been on the agendas twenty years ago. For example, among the 25 areas concerned with studies of learning and teaching, countries have listed not only the perennial issues education in science or the education of the gifted, but also studies of

violence and extremism and of the environment. There are R&D concerns with gender issues as well as problems of minorities. In both schools and higher education, studies of management and administration programmes are noted, as are studies of student performance, system evaluation and outcomes. The implications of internationalisation, which are explored in Chapter 7, is another predominant theme.

If these several subjects are grouped together, the following are examples of the broad research areas that may be relevant to many countries:

- theory of knowledge and production of knowledge;
- education statistics and indicators as a part of the knowledge base;
- the school's content in terms of cultural change;
- the school's content and the development of identity;
- cultural conditions and environments for learning;
- the institutionalisation of education and care;
- curriculum materials and aids and their production and utilisation;
- the organisation of future learning institutions;
- the development of school leaders, local management and teachers;
- the role of mass media as socialisation agents;
- the development of rationality in pluralistic societies;
- the follow-up of reform work in education;
- pathways in general, technical and vocational education;
- the transition from school to work, and further education and training;
- adult literacy;
- coherent policies for lifelong learning.

Groups with an interest in educational R&D will assign different priorities to these research areas. There are likely to be large differences of conceptualisation and approach also within these broad areas. These variations notwithstanding, common priorities among countries may also be identified. Among these are internationally comparable education statistics and indicators, development of school leaders, local management and teachers, technical and vocational education and progressions into lifelong learning and work, and linkages between education, economy and society more broadly. The fact that there is much common ground and overlap in the research interests expressed by countries urges the consideration of whether current arrangements for international research collaboration are adequate or whether new procedures are needed for strengthening the international dimension in prioritising topics for research, for agenda setting, competitive bidding, conducting of investigations, and for evaluating and disseminating the findings of research. This issue will be returned to in Chapter 7.

Chapter 4

The Position of Educational R&D in OECD Countries

Throughout this report, it has been possible to draw upon an extensive literature on educational R&D, including the reviews recently undertaken by many OECD countries on the condition and functioning of their systems for educational R&D. Together with the national case studies specifically prepared for the three international seminars sponsored by CERI, they offer many insights into the position of educational R&D in the OECD countries.

This chapter takes up certain comparative dimensions for discussion – finance, human resources and institutional structures – and reflects upon some of the general characteristics of this field of action which can be derived from the individual country studies. It also suggests a frame for future comparative evaluative studies. Just as educational R&D does more to expose questions and complexities than to produce immediately usable answers, so these comparative dimensions demonstrate the variability of conditions under which disciplined enquiry may flourish or languish.

Expenditure on educational R&D

Earlier in this report it was noted how the resources allowed for educational R&D provide probably the most rigorous indication of national commitment to it. This is the reason why OECD initiated work on the development of international indicators of educational R&D effort. The work on the indicators was in large part carried out by the Australian Council for Educational Research (see McKenzie, 1995) and was generously supported by the national authorities of Australia. The indicators are based on the definitions and conventions contained in the *Frascati Manual* (OECD, 1994) which establishes OECD's approach to the measurement of R&D activities in general. A brief account of how the R&D indicators were developed can be found in Annex 3.

For R&D expenditure, two indicators are used: *i)* the percentage of total education expenditure allocated to educational R&D, which indicates the priority accorded to R&D within education; and *ii)* the percentage of total R&D expenditure allocated to educa-

tional R&D, which indicates the importance of education within the national R&D effort as a whole.

Both indicators provide a basis for considering whether expenditure on educational R&D is adequate. The allocation of expenditure between different sectors and research activities can indicate where priorities lie. The focus is R&D *on* education, not R&D *in* education. In normal circumstances, research on education will constitute only a small part of all the research conducted in educational institutions, especially universities.

Only nine OECD Member countries were able to supply relevant data, and only six data relevant for both expenditure indicators. The available data for these countries and the calculated indicators are reported in Table 4.1. Considerable caution needs to be exercised in their interpretation. The notes to the table indicate some important qualifications. A more general point relates to the magnitude and role of the higher education sector. Since many university staff typically have a research role, the cost of this is estimated as a fraction of total personnel costs to reflect the proportion of time notionally allocated to research. Where teacher education occurs in teachers' colleges without an explicit research role, a notional allocation of academic staff time to R&D would not be made. Where long-standing teachers' colleges are reclassified as universities or incorporated into universities, a notional allocation of a proportion of staff costs to R&D is likely to be made but is likely to overestimate actual R&D effort, at least in the early years after the change.

From the data in Table 4.1 it is clear that educational R&D is only a minor activity in the educational sector as a whole. In the six countries for which relevant data are available, on average only 0.27 per cent of total education expenditure is allocated to educational R&D. The range among countries is from 0.37 per cent in Australia to 0.18 per cent in Ireland. Educational R&D also accounts for only a small proportion of total R&D expenditure, with the average for the nine countries for which the relevant data are available being 0.92 per cent and the range being from 1.5 per cent in Australia to 0.4 per cent in the United Kingdom.

Breakdowns of expenditure on educational R&D into sectors in terms of both type of expenditure and type of research are given in Table 4.2. Most educational R&D expenditure is incurred in the higher education sector (65 per cent on average). The major exceptions to this pattern are Ireland (35 per cent), the Netherlands (30 per cent) and New Zealand (47 per cent). In the case of Ireland, the remainder of expenditure is incurred on R&D activities in the government sector. In the Netherlands, the remainder is more evenly spread between the government sector (40 per cent) and institutions in the private non-profit sector (30 per cent). In New Zealand, the equivalent proportions are 43 per cent in the government sector and 10 per cent in the private non-profit sector. Austria is the only other country with substantial educational R&D activity in the private non-profit sector (15 per cent).

In all countries, government is the principal source of funds for educational R&D, either directly through its own research or, more significantly, through research financed from universities' general operating grants. Some countries also appear to place a relatively strong emphasis on research commissioned by government. In the countries for

Table 4.1. **Expenditure on educational R&D as a percentage of total expenditure on education and of total expenditure on R&D**

(in millions of local currency and at current prices)

	Year	Total public and private educational R&D expenditure (a)	Total public and private educational expenditure (b)	Total public and private R&D expenditure (c)	a/b (%)	a/c (%)
Australia	1990-91	78	21 043	5 091[1]	0.37	1.53
Austria	1989	143	–	22 967	–	0.62
Canada	1991-92	118[2]	49 022	10 289	0.24	1.15
Finland	1991	120[3]	41 455	10 171	0.29	1.18
Ireland	1991-92	3[3]	1 638	318	0.18	0.94
Netherlands	1991	98	31 340	10 381	0.31	0.94
New Zealand	1991-92	7	–	644[4]	–	1.09
Sweden	1991-92	231[1,2]	100 286	41 352[4]	0.23	0.56
United Kingdom	1991-92	53[3]	–	12 619	–	0.42

1. Data for 1990.
2. Likely to be underestimated since only data for the higher education sector are included.
3. Likely to be underestimated since data are not available for the private non-profit sector. In Finland a potentially more important source of underestimation is the lack of data on expenditure on land, buildings and other capital items for educational R&D. In Ireland, the non-inclusion of central overheads attributable to educational R&D in the higher education sector is a potentially more important source of underestimation.
4. Data for 1991.

Source: OECD (1995*a*).

Table 4.2. **Expenditure on educational R&D**

(in millions of local currency and at current prices)

i) By sector and type of expenditure

	Year	Government sector			Higher education			Private non-profit			Total
		Capital	Labour	Other	Capital	Labour	Other	Capital	Labour	Other	
Australia	1990-91	1	5	3	9	44	14	0	2	1	79
Austria	1989	–	9	3	9	54	48	1	11	9	144
Finland	1991	–	2	1	7	70	40	–	–	–	120
Ireland	1991-92	–	2	–	–	1	–	–	–	–	3
Netherlands	1991	–	25	13	–	20	10	–	20	10	98
New Zealand	1991-92	–	1	2	–	3	–	–	1	–	7
United Kingdom	1991-92	–	6	–	2	45	–	–	–	–	53

ii) By sector and type of research

	Year	Government sector			Higher education			Private non-profit			Total
		Basic	Applied	Develop-ment	Basic	Applied	Develop-ment	Basic	Applied	Develop-ment	
Australia	1990-91	2	3	3	25	32	8	1	1	1	76
Austria	1989	3	8	1	40	57	15	3	17	–	144
Ireland	1991-92	–	2	–	–	1	–	–	–	–	3

Source: OECD (1995a).

which data are available, there is little funding for educational R&D from non-government sources such as business, philanthropic foundations or non-profit organisations.

In some countries, however, private foundations do play a role in financing basic and strategic research as well as some applied developmental work. In the United States, foundations such as the Carnegie, Ford, MacArthur, Melton, Rockefeller, Russell Sage and Spencer Foundations have made significant contributions over the years. Also in Europe and Japan there are independent foundations and business councils that supplement the resources distributed by government-dependent research councils and institutes. Examples are the Muffield Foundation in the United Kingdom, Volkswagenstiftung in Germany, Bank of Sweden, Tercentenary Foundation in Sweden, and the Fundação Calouste Gulbenkian in Portugal.

Educational R&D is a highly labour-intensive process. As shown in Table 4.2*i*, labour costs account for almost 75 per cent of educational R&D expenditure, on average, in the seven countries which supplied relevant data. The importance of labour costs in research expenditure indicates the need to ensure high-quality research training and the productive use of researchers' time.

There is little information on the types of research to which expenditure is directed. Only three countries supplied data which classified research into the categories of basic research, applied research, and experimental development as shown in Table 4.2*ii*. Although the *Frascati Manual* provides definitions of the categories, it is certainly not clear whether the categories have been used comparably in the three countries (*e.g.* see US case study in Annex 1). In the case of Ireland, almost all educational R&D was classified as applied in nature. In Austria and Australia about one-half of all expenditure on educational R&D was classified as applied, and around one-third as basic in orientation. In both of these countries only a little over 10 per cent of expenditure was allocated to developmental activities – the "D" of R&D. In the United Kingdom, about a third of all funds went to basic-strategic and assessment projects and further and higher education (Loder, 1992).

Thus, finance for educational R&D is variable between countries but marginal as a proportion of the amount spent on either education or research as a whole. These facts lead to two possible conclusions. First, countries should assess their priorities with a view to increasing expenditure. Second, recruiting teachers and other practitioners to the search for knowledge, as has been argued by Ekholm (1995), will help strengthen the resource base of an otherwise weakly nourished activity.

Staffing of educational R&D

The amount of personnel resources allocated to educational R&D is an important indicator of national commitment to strengthening education through R&D. In *Education at a Glance* (third edition) (OECD, 1995*a*), two indicators of the magnitude of personnel resources in educational R&D are used: *i)* educational R&D personnel as a percentage of total R&D personnel, which indicates the importance of education within the R&D effort as a whole; and *ii)* educational R&D personnel as a percentage of total R&D personnel in

higher education, which indicates the relative importance of educational R&D in the higher education sector.

Relevant data are available in only eight OECD Member countries and these are presented, together with the calculated indicators, in Table 4.3. As with the expenditure data, caution needs to be exercised in interpreting them. The staff numbers are full-time equivalents (FTE) committed to R&D, and they reflect notional allocations of time fractions committed to research by staff in higher education institutions. The notes to the table indicate more specific qualifications of some of the data.

The full-time equivalent personnel involved in R&D on education constitute only a small part of the total personnel allocated to R&D as a whole. Across the eight OECD countries concerned, on average educational R&D personnel constitute 1.1 per cent of all R&D personnel. The proportion of total R&D personnel involved in research on education is relatively high in Australia (2.3 per cent) and the United Kingdom (1.3 per cent), although this may be partly due to the fact that both countries include significant numbers of post-graduate students in the measurement of R&D personnel. The proportion appears to be relatively low in Austria (0.7 per cent) and Sweden (0.4 per cent).

A breakdown of personnel engaged in educational R&D into sectors is given in Table 4.4. About 75 per cent of educational R&D personnel, on average, are located in the higher education sector in the eight countries concerned. The major exceptions to this pattern are Ireland (30 per cent), the Netherlands (50 per cent) and New Zealand (55 per cent). On average, only about 20 per cent of educational R&D personnel are employed in the government sector despite the fact that governments typically have the major responsibility for financing and providing education. Among the eight countries concerned, about 5 per cent of educational R&D personnel are employed in private, non-profit institutions, on average. Only in Austria and the Netherlands are more than 10 per cent of educational R&D personnel located in the private, non-profit sector.

Educational R&D personnel are more heavily concentrated in higher education than are R&D personnel as a whole, and this concentration may have an important bearing on both the character of educational research and the magnitude of the educational R&D effort in most countries. Since staffing in higher education institutions tends to be related most strongly to student numbers, the R&D effort in education is more dependent that in other fields overall on student enrolments in higher education. Where the dominant enrolment in education faculties is in teacher education, the educational R&D effort becomes dependent on these enrolments and ultimately on the demand for teachers. In a period of decline in student enrolments in schools and a corresponding decline in teacher education enrolments, such as Australia has experienced in recent years, there is no room for growth in the educational R&D capacity in higher education. If a period of decline follows an earlier period of rapid expansion and recruitment of relatively young researchers, then there is a slow rate of retirement from the R&D community and so little opportunity even for refreshment through the recruitment of staff to replace those leaving.

A further feature of educational R&D is that it generally has a higher proportion of personnel classified as researchers than R&D as a whole. On average, about 80 per cent of educational R&D personnel are classified as researchers, that is, as professional staff engaged in the design, conduct and management of research projects. The remaining

Table 4.3. **Educational R&D personnel as a percentage of total R&D personnel and as a percentage of total R&D personnel in higher education**

(full-time equivalent)

	Year	Educational R&D personnel (a)	Total R&D personnel (b)	Ratio a/b (%)	Educational R&D personnel in higher education (c)	Total R&D personnel in higher education (d)	Ratio c/d (%)
Australia	1990-91	1 536[1]	67 796[1]	2.27	1 387[1]	27 082[1]	5.12
Austria	1989	160[2]	23 084[2]	0.69	112[2]	6 058[2]	1.85
Finland	1991	347[3]	29 575[3]	1.17	337[3]	7 662[3]	4.40
Ireland	1991-92	75[4]	8 799	0.85	22[4]	3 010	0.73
Netherlands	1991	720[2]	66 710[2]	1.08	360[2]	20 090[2]	1.79
New Zealand	1991-92	95[5]	8 837[2]	1.08	53[5]	2 326[2]	2.28
Sweden	1991-92	236[2]	53 604[2]	0.44	236[2]	16 810[2]	1.40
United Kingdom	1991-92	3 322[1]	255 000[1]	1.30	3 117[1]	62 000[1]	5.03

1. Includes all post-graduate students studying for a research-based qualification.
2. Includes only those post-graduate students who are on the university payroll or employed by the university as a research assistant.
3. For post-graduate students, a person-year is only included when financed by grants of amounts corresponding to a normal salary.
4. Included only those post-graduate students enrolled at Ph.D. level.
5. Includes post-graduate students.

Source: OECD (1995*a*).

Table 4.4. **Breakdown of educational R&D personnel by sector and type**

(number of person-years)

	Year	Government sector		Higher education		Private non-profit		Total
		Research staff	Other staff	Research staff	Other staff	Research staff	Other staff	
Australia	1990-91	90	27	1 218	165	25	12	1 537
Austria	1989	11	9	87	25	15	13	160
Finland	1991	5	5	276	61	..	..	347
Ireland	1991-92	36	16	22	..	2	..	75
Netherlands	1991	160	100	360	..	100	..	720
New Zealand	1991-92	17	17	53	..	9	..	96
Sweden	1991-92	..	..	193	43	..	..	236
United Kingdom	1991-92	84	121	2 140	977	..	..	3 322

Source: OECD (1995*a*).

20 per cent are technicians and support staff who normally work under the supervision of researchers. Across R&D activities as a whole, researchers constitute only about 50 per cent of R&D personnel.

In Australia and the United Kingdom, post-graduate students are estimated to constitute the majority of the full-time equivalent researchers engaged in educational R&D (McKenzie, 1995). On completion of their higher degrees, few are able to make a full-time career in educational R&D and few even in positions which provide for a part-time R&D role. There is an urgent need in many countries to review the career paths of educational R&D personnel to ensure that the returns on societal and individual investment in training are maximised. There is also a need to consider reducing the dependence of the educational R&D effort on the numbers of teaching staff in education faculties in higher education institutions, perhaps through more deliberate creation of specialist, even full-time, research teams in higher education and other institutions.

Convergences and divergences in R&D cultures

It is not easy to see any clear connection between the characteristics of the different systems depicted in the data presented in the above two sections and their policy frames or qualitative features. Yet, whatever the level of funding or of human resources, the trend appears to be towards increased similarity in educational policies and structures, and this will no doubt be accentuated by the advance of the European ideal through the agency of the Commission of the European Union. But even without such a powerful force external to individual national policies, it is a commonly observed phenomenon that educational policies seem to go through quite similar sequences in different countries. Thus the quest for economic development which, it has been hoped, is enhanced by investment in education; the attempts to promote the opportunity concepts of equality to be followed by attempts at more positive discriminatory forms of equality; the displacement of equality policies by attempts to secure quality and effectiveness; the attempts to open up governance to wider participation; the weakening of professional control through the emplacement of quasi-market mechanisms – these have all figured in much the same sequence on the policy agendas of the different countries. Even the fact that centralised systems are becoming more decentralised whilst decentralised systems go in the opposite direction can point to a common discourse of the relationship between the state and public institutions.

The two competing or perhaps complementary explanations offered for this commonality have been that countries imitate each other – perhaps because they interact and communicate in forums provided by bodies such as the OECD, or perhaps because they more actively seek out examples of change from other countries. Some examples of imitation are the notice taken by the United Kingdom in the late 1960s of the Swedish comprehensive schools experiment (Husén and Boalt, 1967); the transfer of experience of the war against poverty in the United States to urban policies in the United Kingdom; many higher education examples – the adoption of the Humboldt model in the United States; and the widespread adoption of US university practices and patterns in Europe and the Far and Middle East.

The second explanation, according to certain theorists, is that there is a natural developmental sequence which countries may follow as they pass through particular stages of economic and social development or decline. This would be more difficult to prove, but has obvious persuasive power, as demonstrated by Walberg *et al.* (1994).

The phenomenon of convergence should make it easier for the findings of R&D to be transferable between countries, at least at the level of problem identification. But despite the tendency to convergence, the country reports bear witness to wide ranges of R&D content and structure in the different systems and how they respond differently to the particular circumstances of time and country. The differences, to be held in balance with the growing commonalities, are the result of several factors which create a field of force within which R&D is located. Good policy analysis would look for the commonalities whilst identifying and respecting the idiosyncrasies.

These conditioning factors are:

- the patterns of government and the political culture adopted by a country;
- its policies and agenda for education;
- national intellectual traditions which condition the orientations of researchers.

The following paragraphs briefly examine each in turn.

Relationship to models of government

There are in contention several models of educational government – nine have been identified as being part of current discussion in the United Kingdom (Cordingley and Kogan, 1993). They divide into two groups: community agencies which are elected and are accountable directly to the local public and the central government; and government agencies which are appointed and not elected and are accountable to the local public only remotely and through central government range.

Each of these models has been shown to display different propensities in terms of the value positions advanced, the needs to be met and the functions to be performed. It follows that the agenda and governmental and social arrangements for educational R&D are also likely to be affected by the style of government being pursued. At the extreme, a "Napoleonic" model of government will promote R&D that is positivistic in seeking to provide information about problems and programmes that are in progress in such a way as to enhance existing policies. The various market models of government will expect much of the knowledge about education to come from the signals emitted by "customers" in exercising their market choices, and those countries most vigorously adopting it have not been forward in sponsoring independent research. A democratic-electoral model is more likely to sponsor critical research and that which incorporates knowledge of users' perceptions of desired states and services, although it has been remarked that democracy can equally be an electoral dictatorship and thus likely to pursue positivistic modes of knowledge generation. At the level of operating systems, different models of governance also generate different expectations for information for parental choice, the monitoring and evaluation of services, for giving a public account

and social reporting, and needs analysis. All of these are needs or functions that depend on different degrees of research-based information.

Responsiveness to policy and political cultures

The foci of educational R&D throughout OECD countries are as various as the problems, institutional structures and political cultures of the countries. Whilst there is no automatic relationship between the nature of educational R&D and policy trends, it has no doubt been affected by the extent to which the country has followed the generally universal trends in policy described above. The fact that these trends do not apply with equal force in all the countries must be noted, however, since it limits the appropriateness of broad generalisation. In the 1950s and 1960s, policy was primarily concerned with inputs and structures. From the mid-1980s the concern changed to that of outcomes, often sought in a measurable form. In the 1950s and 1960s, the central value being endorsed was that of increased equality. In the late 1980s and 1990s, the theme is that of quality and effectiveness. Until the 1980s, the assumption was that education would be led by professionals with an altruistic concern for their clients. In the 1990s, the governmental structures have combined central insistence on efficiency and quality with increased devolution to the institutions and to the client groups.

These changing concerns are reflected in examples in the country reports of the responsiveness of educational R&D to policy shifts mentioned in the country case studies in Annex 1. In Austria (Gruber, 1995) for example, in the 1960s, research focused on the issues of managing access to post-compulsory education and forecasting manpower requirements. In the 1970s these concerns gave way to the issue of comprehensive schooling and its outcomes. In the late 1970s and 1980s, critical work on equality of opportunity and the study of gifted students became the focus. In the 1990s school autonomy has become salient as a research subject.

The relationship between research programmes and policies is well illustrated by the differences between Norway and Sweden (Eide, 1995). For many decades, Sweden has attempted to find a scientific base for its social reforms and has strongly institutionalised the interplay between research and policy-making. The Norwegian research system has been substantially, though not wholly, independent of policy frames, and innovation has been allowed through exemption from central curriculum requirements in the schools. Swedish policy has been more responsive to management by objectives and outcome measures whereas Norway has been quicker to pick up the fruits of German psychological theory and radical and hermeneutic thinking about the nature of knowledge and education (Kogan, 1995).

There is now a discernible reaction, however, in Sweden from the linear and social engineering model of R&D towards practitioner-based disciplined enquiry (see the Swedish case study in Annex 1). The centre of attention has been occupied by individual capacity, learning and cognition. A "performance paradigm" (Åasen, 1993) has predominated. This comes close to an instrumental R&D model. Most recently, the education and training system has moved from direct prescription towards government by objectives and evaluation (Granheim and Pettersson, 1995). The steerage by information

gives research a role. It also means that instrumentalism is replaced by research evaluated by cognitive criteria encouraging questioning of professional work and decision-making. "In terms of rationality, there is a change from an instrumental rationality to a rationality that could be termed ecological inasmuch as it means relating issues to the factors forming the context" (Wallin, 1995).

In Norway, there is a build-up of systematic and policy-related research in higher education. The Norwegian Ministry of Education, Culture and Church Affairs has also recruited multiple perspectives on the nature of evaluation – some of them stemming from critical and hermeneutic thinking – in its move from prescription to school-based evaluation as a mode of control (Granheim *et al.*, 1990). Such research interests may reflect recent policies changes which might themselves change again under new administrations. But, it should be repeated, these countries sponsor independent and critical research, the findings from which might go against the policy trend. This is seen as desirable because educational research is considered to play a role in the shaping of social policy. At the CERI-sponsored seminar held in Sunne, Sweden, in May 1993, Telhaug (1995) stated the position as follows:

> "Thus I want to ask: May educational research function entirely independently of the current policy for social development and of the goals for school development? Does not the historical perspective (...) show that educational research always has been tied to overarching political thinking? Has not research always been a power factor which it has been important for the authorities to have in their service? I want to underline that research is part of overarching political thinking; through the choice of issues and approaches research is able to penetrate areas marked by clashes of interests. It can affect or not affect the conditions of life for different social groups merely by focusing attention on them, or by not doing so."

The discussion of whether there is a fit between policies and educational R&D leads to a difficult normative issue. Such a fit does not always occur, and disciplined enquiry has been a source of critique leading to change. The creation of selective systems of education were reinforced by educational testing but weakened by the funding of educational sociologists and psychologists. Received assumptions of either policy-makers or of academics can be challenged as soon as wider perspectives are recruited. The British Economic and Social Research Council commissioned a careful evaluation of educational R&D policies and practice from an expert committee and consultants. The council then, unusually, sought opinions on the committee's report from the world of business. The criticisms were that there was insufficient regard to the need for clear prioritising, and that the report bore the hallmarks of the thinking of experts in the field being evaluated. They also proposed their own list of somewhat instrumental priorities (Parsons, 1993).

Is it the business of educational R&D to follow the policy propensities of the system by adopting a particular research style? That would be a bad bargain for both sides. It would discourage many able people from becoming researchers because independence of thought is a valued perquisite of the research career, and it would self-impose a restricted vision on governments that would benefit from knowledge of concepts and states of which they disapprove, if only to be able to contest them.

Intellectual inheritances and foci of research

Researchers respond to intellectual traditions as well as policy thrusts. Indeed, it is difficult to say whether the Swedish and Norwegian differences respond more to policies than to intellectual inheritances. To take another example, in the three German-speaking countries – Austria, Germany and the German-speaking cantons of Switzerland – there have been identified characteristics which differentiate them from those of other groups of systems (Gruber, 1995). They are:

- a preoccupation with historical and ''systematic'' questions deriving from the rich inheritance of nineteenth century philosophy;
- the lateness of the shift from the philosophical-speculative discipline of pedagogics to methodologically pluralistic educational science;
- reservations about measurement and testing;
- recent expansion, institutionalisation and diversification of educational research;
- retreat from politically controversial issues.

Unsurprisingly, there is no comprehensive information from the country statements or elsewhere about trends in the methods followed and the theories observed in educational R&D. But such statements as we have reinforce the point that whilst academic cultures remain strong, the attention to both policy agendas and the need to produce R&D from a user-reflexive perspective are increasingly noticeable.

In Australia, for example, the trend has been away from paradigms drawn from psychology and there is an increased emphasis on qualitative approaches and multivariant analyses (McGaw *et al.*, 1991). In Portugal, the importance of psychological development has decreased, and studies on the relational dimensions of educational practices seem to be replaced by those related to practices by each of those involved in education. The tendency has been towards positivism and this has been criticised as creating a dichotomy between administrative pragmatism and an academicism that insists on perceiving social reality based solely on ideological postulates and on creating hypotheses based on theories transposed from elsewhere (Stoer and Correia, 1994). Perhaps because they are starting further back, in Austria there is a noticeable shift from the 1960s from philosophy and the humanities base, from historical to empirical research, and a strengthening of the connections with psychology and the social sciences. In the former Federal Republic of Germany, two-thirds of projects were descriptive or qualitative studies based on small samples. Cross-sectional and longitudinal studies had a subordinate role. Questionnaire methods predominated in about 70 per cent of the total. The universities concentrated on history and educational theory (Germany, 1994). In the Netherlands, adequate scientific knowledge on most issues is produced, without, however, much production of theory or attentiveness to the need for synthesis (Kloprogge *et al.*, 1994).

But as has been noted, it is to Sweden that attention is directed because it is there that R&D policies have been most deliberate and that Sweden has, too, opened itself up to sophisticated critique. Knowledge-productive analytical research was strong in the 1980s largely because it was explicitly linked with long-term planning. Research work thus took on a long-term perspective. Empirical research was strong because the national research programme underlined the importance of building up databases as

source for point-of-time series studies. Sweden had – and still has today – a strong collection of longitudinal data. But as Åasen (1993) shows, the starting points of the policy did not open the way for a critique of the system. The research was concerned with the consequences of education and individual conditions and the effects of education in an administrative perspective.

Institutional structures

Several factors differentiate the institutional arrangements in the different countries. There are some, but no clear pattern of, differences between federal and unitary systems. Some countries rely mainly on universities and others on separate institutes for R&D.

In federal systems, the allocation of tasks between federal and state governments is by no means uniform and it varies over time. Thus, with the falling back of funding for federally backed R&D in the United States, the individual states began to increase their support (Peters, 1994). In Austria the *Länder* are responsible for compulsory education, whilst post-compulsory education is a federal responsibility. Yet there is a national institute for research and school education concerned mainly with school and curriculum development. In Germany the federal authorities share responsibility for science policy with the states who also support educational research in universities and through independent institutions. There are supraregional research institutions located outside the universities. Switzerland has no national educational research institute and its R&D institutions are located at the cantonal or regional level. They have a large number of institutions (76), of which 39 are at university level. There are differences between the French-speaking and German-speaking regions in terms of the number and size of institutions. Two research associations play an important role in promoting and organising educational research. They aim to improve co-ordination and co-operation among the different kinds of institutions. In Australia, the Australian Research Council, among other roles, allocates research funds and supports specialist R&D centres. There is thought, however, to be an insufficient organisational framework for planning and co-ordinating R&D (McGaw *et al.*, 1992).

The unitary states show no more uniformity of structure. The Netherlands has a centralised education policy and its research is co-ordinated nationally by the Institute for Educational Research (until 1995), whilst universities have considerable room to initiate research. The Dutch Science Council has so far not played a large role with regard to educational research, although there are signs of change in this respect. By contrast, the British Economic and Social Research Council is the main provider of research funding for education, although government departments, if to a decreasing degree, sponsor specific mission-oriented research. Two private foundations also provide grants for educational research, all the more important in view of the increased tendency for the research council to support research related to productivity and the restriction of central government funding to instrumental and mission-oriented research.

Most OECD countries have educational research centres, of which university-based or autonomous national institutes or academies are the most frequent, rather than units

within ministries or voluntary associations (Ohsako, 1994). In some countries (*e.g.* Sweden) educational R&D is mainly lodged within the universities, whereas in others (*e.g.* Norway) a great deal of the work is handed to directly funded institutions, or institutions funded by a research council. In some countries, for example Germany and the Netherlands, applied and developmental work is in separate institutions from those, mainly universities, where basic research is undertaken. In the United States, where there have been successive attempts to fund separate R&D centres and laboratories, many university schools of education are devoted to similar tasks.

It has been observed that different systems allocate different statuses to and have different expectations of educational R&D, and this is reflected in the institutional structure. Thus, the differences between Swedish and Norwegian structures derive from the differences in beliefs about the extent to which there can be nationally driven holistic policies as distinct from practitioner and locally based practices which themselves might be aggregated into national policies.

Different structures emanate from different constitutional traditions which go well beyond the concerns of educational R&D. These may not matter as long as certain principles are observed, namely that the structural arrangements allow for the requisite degrees of freedom for researchers, and they make for appropriate connection with policy-makers and practitioners.

Educational R&D systems and models

It will be clear from the foregoing sections that the comparative study of educational R&D is only at its starting point. So far, this report has drawn attention to comparisons between resources, both financial and human, convergence of policies and systems, relationships of different R&D propensities to models of government, political cultures and intellectual and cultural inheritances, institutional structures and the range of foci and problems with which R&D contends. In doing so, it has had to rely on information that is nationally disparate and much of which not fully researched.

It would be possible to create a more comprehensive analysis by adding other structural characteristics. National systems for educational R&D can be described using different classification variables. Examples of such variables might be: the level in the system at which most decisions about the research agenda are made; the degree of involvement of the different stakeholders in decisions concerning the research agenda; the type of R&D institutions; the degree of R&D steering by means of instruments such as the allocation of human resources, rules and regulations, goals and priorities; and users' demand for educational R&D knowledge.

The level of funding in a country is another classification variable. If the level is below half of one per cent of total educational expenditure – public and private sources of funds combined – then the question arises as to whether there is sufficient R&D capacity for servicing the knowledge and innovation needs of a changing educational system. With the possible exceptions of Australia and the Netherlands, all OECD countries for which recent data are available appear to fall short of this target. (*Note:* a review panel

appointed by the Australian Research Council recently recommended a target of 0.70 per cent of total educational expenditure to be allocated to educational R&D. Of this, 25 per cent should be raised through the "industry" levy to support the Education and Training Research Board, and the other 75 per cent should come from current sources. The target is to be achieved by the year 2005.)

Of course, no absolute thresholds for R&D investment in education can be given. Not only may there be diminishing returns to investment at high levels, but upper limits of funding are set also by operational factors, such as the response behaviour of schools and by the capacity of information-management systems to handle a large supply of research information. An overload of information which cannot be handled by either research, policy or practice is not what R&D systems aim for.

The orientation of research is another variable that can be used to classify national systems for educational R&D. These would include the degree to which countries sponsor fundamental or basic research, applied or decision-oriented research. In most cases, fundamental research is financed by a national council or foundation for the advancement of scientific research. The balance in size and the share in total finance of the fundamental sector compared with the applied sector is a defining characteristic of a national system for educational R&D. A distinction can also be made between different models of educational R&D. The incidence of the linear model as compared with that of Huberman's (1994) four other models of educational R&D (see Chapter 6) would be a frame for comparison.

Conclusions

This chapter has shown that countries have exercised a wide range of choice in the ways in which they devote resources, staff and administration to educational R&D. It has also been shown that in spite of policy and systems convergences, R&D is strongly anchored in national political and social contexts. It responds to intellectual traditions that may or may not be consistent with current political styles.

Educational R&D is thus not simply the product of a "scientific" search for truth, although the universal principles of logic, reason and demonstration of evidence must be sustained as the procedural values of all competent researchers. Nor is its nature reliably predicted from the political cast of governments: both right- and left-wing parties have supported positivistic research. Some committed to social engineering approaches have been the most forward in sponsoring critical and hermeneutic approaches.

Whilst this report argues for a greater degree of rationality in R&D policies the eclecticism and open-mindedness apparent in at least some systems seem appropriate even if it makes for a certain untidiness. Governments need "useful" and directly applicable knowledge, so far as it possible to generate it. But creating a larger universe of concepts with which to explain trends and critiques of existing states will ultimately lead to their more effective testing and will provide politicians with material for their future action agendas. Political prophesy is best assisted by knowledge that is not tightly constrained within existing scientific and policy paradigms.

Chapter 5

Educational Policy and Educational R&D: Can the Relationship be Improved?

Given the uncertainty of definitions in this area, what might be the interplay and mutual dependency of educational policy and educational R&D, and how might their relationship be improved? In this chapter, models are explored of the relationship between research and policy, the linkages, through communication and otherwise, in the educational R&D system, the relationship of policy and practice and ways of improving the relationships between these different activities. The central concepts employed are "knowledge", "communication" and "usefulness".

The power relationships that underlie these linkages in the educational R&D system also figure in the analysis. They are various: some researchers work within managerial hierarchies in which they are subordinate to policy-makers; those working within government departments are obvious examples. Others work within a market in which the knowledge is purchased on the basis of competition with other researchers, a mode of relationship increasingly apparent in many countries. For the most part, the relationship is that of a modified or quasi-market in which, however, exchange and negotiation are the styles adopted. In such cases, knowledge is exchanged for resources and legitimacy. Some market arrangements, however, allow for quite substantial tenurial rights which weaken the pull of the market and emphasize the need for well-constructed negotiation and exchange.

Although the focus is on the relationship between policy-makers and R&D producers, the position of the practitioners – mainly teachers and school leaders – will also be considered.

Models of the relationship between research, policy and practice

It is widely recognised that there are large lacunae between researchers and practitioners in education, and between the producers and the users of knowledge – a feature, incidentally, of all fields of practice seeking to secure a knowledge base for themselves, and one which has been noted repeatedly over time. This problem is seen, for example, in a review of educational research in the United States (OECD, 1971) and in the country

case studies on educational R&D prepared by the United States (Bick and Jackson, 1994), Sweden (Pettersson and Wallin, 1995), and Switzerland (Gretler, 1994).

The typification of educational research as fragmented, irrelevant, of low quality, efficiency and utility [see Finn, 1988; Kaestle, 1993); and national reviews of the state of educational research – Australia (McGaw *et al.*, 1992); Austria (1994); Germany (1994); Sweden (Åasen, 1993); Switzerland (Gretler, 1994); United States (Atkinson and Jackson, 1992)] seems to centre on its social characteristics, namely a lack of good communication, negotiation and relationship between the operational and assumptive worlds of provider and user of R&D.

Caplan *et al.* (1975) outline three theories which may explain the possible gap between policy and research:

- *policy-constraint theory:* policy systems or policy-makers are unable to handle the "rational" findings of educational research;
- *knowledge-specific theory:* scientific research is limited and located within a small framework of theories and empirical variables;
- *"two-communities" theory:* policy-makers and researchers adhere to different cultures, each with its own language, norms and values.

Caplan *et al.* (1975) recommend the use of several forms of *communication* in order to bridge the apparent gap between educational policy and research. The central aim of communication in R&D settings is to transfer a knowledge message. There are several models describing processes of knowledge, transfer and knowledge utilisation (Weiss, 1979 and 1982). The first two models are of a linear kind, describing both conclusion-oriented and decision-oriented knowledge. The *knowledge-driven model* is the classic representation of a linear process: fundamental research leads to applied R&D, which in turn leads to application. In another linear model – the *problem-solving model* – the problem originates and steers the process: problem definition is followed by the identification of gaps in knowledge and the execution of a research study. Once the findings are available they are interpreted in terms of their policy implications, knowledge of which then feeds into the policy-decision process.

Two other models of knowledge transfer and utilisation deny a linear process. In the *interactive model* there exists a complex pattern of connections between the various partners (policy, research, practice, educational advisers) who use different communication media. The use of research is part of a broader process, and the policy-makers use different kinds of knowledge. By stimulating interaction at strategic moments, it is possible to strengthen the role of research in the decision-making process. In the *enlightenment model*, such direct relationships between researchers and policy-makers do not exist. There is a constant stream of R&D results, insights and theories. Diffuse processes of policy development are influenced by those results.

Finally, a less important group of models denies any rational role of knowledge for policy-making. For example, in the *political model*, research only comes into play when a decision has already been taken, or research is used as an argument to legitimate or even postpone policy decisions.

Table 5.1. **Models of knowledge utilisation and models of the policy-making process**

Utilisation process	Policy representation
Knowledge-driven model	Rational model of policy-making
Problem-solving model	Semi-rational model
Interactive model	Mixed-scanning model
Enlightenment model	Incremental model
Political model	"Garbage can" model

Source: van Ojen (1988).

There is a relationship between the above models of knowledge utilisation and representation models of the policy process, although it should be noted that these relationships are not unique and exclusive (see Table 5.1).

Models of policy-making and knowledge utilisation do not describe specific national educational policies and their relation to R&D. As was seen in Chapter 4, there is too much variability in contexts, types of problems, and phases of the policy process. The different views on the way research knowledge is expected to come into play in policy and practice are reflected in the structures of educational R&D systems.

Huberman (1994), however, has moved the argument on by classifying models of R&D functioning in four ways: *i)* a classic R&D scenario; *ii)* a closely linked model of interorganisational collaboration for the conduct of research and school improvement; *iii)* a model for extended linkage through interorganisational collaboration; and *iv)* a negotiated model for the conduct of action research.

Whereas a variety of models may be proposed in theory, from the perspectives pursued in this report, it is convenient to distinguish broadly between two categories only: the classic and social engineering model on the one hand, and the interactive, reflexive, practitioner model on the other.

Within the linear or dependency model, whose characteristics have been noted in Chapters 2 and 3, research moves more or less systematically from new knowledge to new and better practice. It assumes that fundamental knowledge will transmute itself into knowledge that can be applied. These knowledge packages are then legitimated, disseminated and used through several channels, including text books, training courses and the work of advisers and inspectors.

Such a model is not redundant in certain areas of didactically related R&D. But it is deficient in terms of how much of the knowledge relevant to education is created. As is pointed out in the report of an evaluation of Swedish educational R&D (Sweden, National Agency for Education, 1993), knowledge is defined and formulated at many levels – that of the individual client and practitioner, the school, the environment of the school, and the wider system or society. In fact, to judge by the results from a study of Swedish R&D, information is mainly collected at the individual and school level. The model is thus factually defective and also a weak model of professional development because, as one British visitor remarked of the United States, "only professors of

education have any fun here''. It also assumes consensus about values – the dominating fault of all systems in which curricula are prescribed centrally.

The communication aspects of the linear model are clear. Essentially, the world divides into tellers and told, thinkers and doers, providers and recipients, researchers and teachers. There need be no feedback from the world of practice, although external curriculum builders, textbook publishers and the rest will always maintain that they incorporate feedback into their products. It is a communicative model which can work well in certain circumstances. For example, the teaching of English in Sweden began in the 1960s, with outstanding results, through the operation of a centrally created development and dissemination plan. But, again in Sweden, attempts to work from knowledge about the lack of equal educational opportunities, through to operational procedures to tackle the problem, were less successful. The intervening variables and the value issues were too complex for either action or communication.

The alternative model is multidimensional. It assumes that fundamental research, which reiteratively tests and conceptualises received knowledge, feeds – at least in substantial form – on the operational experiences encountered in the phases of development, dissemination, installation and innovation. It holds an eclectic view of the process which can accommodate many pioneers of theory (Jean Piaget, John Dewey and others), whose primary sources of data were the children with whom they worked in the classroom. Innovation might begin with teachers in the classroom and become, by an empirical-deductive rather than theoretical-deductive process, the seed-bed of fundamental research. The argument for this model is that ''discrepancy-revealing, system-revealing and resistance-orientated analyses call for a perspective transcending narrower didactic problem definitions''. The relevant paradigm for research in a field as composite and complicated as education has to be ''synthesising, relational (...) taking into account both structural resources and social agents (...). Otherwise, educational R&D could do no more than reinforce the administrative language'' (Åasen, 1993).

The multilinear and reflexive model of R&D thus demands effective modes of linkage between the researcher and the practitioner as an encounter in mutual respect. For the most part, teachers and research cannot deliver independent, authoritative knowledge capable of directing educational policy and practice. Research can only produce knowledge that informs and identifies problems. But it can at best systematise and analyse knowledge about the school as an institution, the teachers' work situation, the learning processes, and school-society relations. To be more relevant, researchers must acknowledge teachers as situational decision-makers, and school activities as situation-determined practice and problem-solving, to include social and institutional possibilities and constraints.

Content of the knowledge base

If we follow the track of incorporating practitioner knowledge into educational R&D, what will the knowledge base look like? First, whilst research does produce knowledge that can contribute to practice, it also has two other less definable benefits. It can produce ''wisdom'' – that is to say, it can heighten sensitivity to problems and the

need to be sensitive to them, and build up the stock of images and institutions that insidiously lead to the better exercise of judgement. Getzels (1971) maintains that the "significant influence of research comes not piecemeal [but] comes rather cumulatively through altering the general conception of human behaviour which serves as general context for educational practice". The transfer to pupil-centred learning did not occur "because someone just happened to have a bright idea that change in the appearance of the classroom might be a good thing (...) or that there were any specific studies showing that children in movable chairs learned more readily than children in other kinds of chairs. The important change was a transformation in our conceptions of the human being as learner" (p. 342). Secondly, there is what might be described as the "aerobic" function of research. It is healthy for practitioners and researchers to wrestle with difficult problems, even if they cannot solve them but only become more aware of their difficulties from common reflection.

The knowledge base will consist of a developing stock of tested theories. It will contain a wide range of analysed case studies, drawn from all levels of educational experience and from many countries. It will contain the fruits of development, most obviously in the areas of the curriculum, teacher training, and schools and other organisations. It will encompass long and deep studies but also short order analysis in which the researchers engage in acts of scholarship rather than research. There might be more "reportage-like research" describing situations and changes at different levels in the school system. These formulations accord with society's development towards a society of negotiation or a segmented society in which conflicting parties use research adversarially (Åasen, 1993).

The multidimensional and interactive model of production and communication accords well with the most developmental views of how education might sponsor reflection and professionalism in its practitioners and relevance in its researchers. The problem is, and always has been, feasibility.

The feasibility problem is at two levels: the nature of the knowledge, and resources and human abilities. The nature of the requisite knowledge is rarely determinant and bounded.

Secondly, if the results of research are essentially to be a growth of human understanding, it has a large task ahead of it because diffusion requires the patient creation of linkage mechanisms. The interactive model depends on optimistic assumptions about practitioner ability, motivation and supporting resources. To secure their success, teachers would have to have time to spend in collaborative work with full-time and trained researchers who could make sure that research questions were well fashioned and that they were directed to a practical outcome. They would also have to be willing to learn the difference between praxis-based wisdom and systematic enquiry.

In this report, ways in which conflict should be expressed and resolved have already been stressed. However, some irresolvable conflict is probably inevitable. Education deals with desired states rather than fixed natural phenomena, and these are endlessly debatable and contestable. Thus, whilst there has to be an alignment of interests if progress is to be made, it will only be meaningful if it is based upon the acceptance of the fact that there are multiple assumptive worlds.

When we move from models of knowledge production and connection, and from considering the content of the knowledge base, it becomes plain that improving the relationship most plausibly involves strengthening the connections between the different constituencies with an interest in the performance and outcomes of research. Such measures depend on an analysis of the perceived problems in research production and utilisation. Weiss (1982) defines the use of (social) research as the way in which knowledge of research is absorbed in intellectual perspectives and in the policy actions of social actors. The "usability" of research refers to a judgement on the possibilities for use.

Linkages in the R&D system

The use of knowledge in policy and practice can be enhanced by several modes of communication at different levels.

Communication of R&D must be multiple and related to the specifics of what is to be communicated, by and to whom. Some R&D statements have to be classically academic, in which the evidence and methods are demonstrated and the conclusions equally analytic in format. But all applied social scientists lose a great deal if they are not prepared to engage in multiple forms of communication. Thus, three or four versions of an important piece of research might be necessary – one for the scholarly community, another for the sponsors, another for wider client and practitioner groups, and another for the more popular press.

Research and policy must communicate at different phases of R&D projects; the communication involves a variety of people on national, regional and local levels. When the communication is restricted to written messages, a tender, a proposal or a research report, chances of under-use or misuse grow. Communication thus needs to take more than one form. It must be systematic but also informal and interactive to encourage the mutual growth of understanding and knowledge.

The conclusions of many studies (*e.g.* Caplan *et al.*, 1975; Goodwin, 1975; Netherlands Ministry of Education and Science, 1978; Weiss, 1979; Nisbet and Broadfoot, 1980; Husén and Kogan, 1984) on communication as an explanatory factor in linking research and policy can be summarised in a simple matrix (see Table 5.2). The

Table 5.2. **Communication between research and policy**

	Research	Relationship	Policy
Project level	1	2	3
Involved persons	4	5	6
Structural level	7	8	9

Source: Hutjes and Cuisinier (1982).

columns in this table relate to the three theories mentioned above, which Caplan *et al.* (1975) propose as explanations for the perceived gap between educational policy and research: policy-constraint theory (policy); two-communities theory (relationship); and knowledge-specific theory (research). The rows of the table refer to the micro-, meso- and macro-levels of the R&D system.

Micro-level linkages

An important factor in the development of a system for educational R&D is the degree to which educational processes at schools are influenced by national policy decisions. Governments which prescribe in detail the curricula and the organisation within schools will more often focus research programmes on problems at the micro-level and on developmental projects. Academic traditions within countries also inevitably influence the research enterprise (see Chapter 4).

Individual R&D projects occur at the micro-level. At this level, the relationship among the various cells (1, 2, 3 in Table 5.2) changes with time. The antecedents and the contexts of a policy question can offer many insights into the nature of a problem which a researcher may be asked to study. It follows that those who formulate a policy question and commission a research study should provide background information and brief the researcher about the policy parameters of the problem. The central point is that the characteristics of the policy-making process affect the ways in which research knowledge may be promoted and utilised. The first condition for successful promotion of R&D is a commissioning policy-maker who is able to explicate what types of results are needed. Next, the policy-maker has to be in a position to formulate or implement new policies. Policy-makers in weak positions, who are not able to negotiate effectively with several other actors with differing interests, are not able to put R&D to work. The best opportunities for using knowledge occur if a policy is being implemented and the results of a research project can be included in a further phase of development. When a new problem is posed but is disembodied from any policy issue, the use of knowledge is uncertain. Evaluation studies of an implemented policy will probably not be used if there is no intention of change or if new policy is being designed without the intention to learn from past experience.

At the same time, critical or theoretical research can have an illuminative, contaminating or critical function. It may contribute to the long-term agenda for policy without, however, producing much impression on the here and now of policy and practice.

This relationship is a precondition for linkage to occur between the process of defining a *policy* question to the process of formulating a policy-relevant *research* problem. Experienced commissioners have much advance knowledge both about the policy problem and about the findings of previous research, often more than the researchers have at the time they are brought into the picture. Moreover, although previous research on research suggests that certain methodologies are likely to produce more useful results, *e.g.* action research and studies involving a qualitative approach, more recent findings show that matching the type of knowledge needed to the type of research conducted is a better explanation than the choice of methodology.

Once a research study has begun, policy processes continue to evolve and sometimes the policy context may change quickly; in less unpredictable ways, the same may happen to the research process. Because both partners in the co-operation (policy, research) are involved in dynamic processes, continued communication (relationship) among them is a necessary condition.

Meso-level linkages

At the meso-level, which is the level where single studies aggregate into research programmes on specific problem areas or sectors of the educational system, the involved persons (cells 4, 5, 6 in Table 5.2) establish the social climate for the communication of a message. The utilisation of educational R&D is not simply determined by some configuration of abstract factors; it is also determined to a large extent by real people. Hence, researchers should be interested in finding out how their studies fit into larger schemes and what type of knowledge products are expected.

As stated also in Chapter 6, a critical and constructive function *vis-à-vis* policy-makers must be combined with the ideal of advancing knowledge. Whenever a methodology for policy-oriented research exists, as opposed to one for discipline-oriented research, as Coleman (1984) argued, it mainly prescribes the guidelines for researchers to analyse problems and to formulate the outcomes.

At the centre of the matrix, those responsible for commissioning and organising educational research need to promote the full breadth of research knowledge; they also need to know where and when in the policy system different types of knowledge may be requested. Commissioners of research are not always the ideal choice as transfer agents between research and policy. Large programmes for policy analysis and research will often need specialised management.

At the other end of the relationship, those who actually make policy decisions need to have an open mind about research, and they should be prepared to adopt in their policies empirical evidence and reasoning. Mostly, policy-makers with a background in research can more easily accept formal knowledge which accommodates their own value judgements.

As values differ, the interests of policy-makers can of course also diverge. Some people will tend to avoid controversial knowledge and only seek legitimation for policy decisions; others might demonstrate a belief in the critical testing of ideas, policies and educational practice. More fundamentally, government departments may be held together by accountability to ministers but with their structures tribal and multimodal rather than unitary. Different divisions face different interest groups and may adopt value positions and relationships which reflect these differences. Some divisions act as "customers" for research and others as brokers between researchers and the customers.

Macro-level linkages

The organisational prerequisites for an interplay between the research and policy systems are handled at the macro- or structural level (cells 7, 8, 9 in Table 5.2). On the research side, a range of institutions can exist, such as university departments, research centres associated with the universities, independent for-profit or non-profit centres, or even institutions linked directly with the ministry of education or other government agencies.

Opinions about the preferred institutional basis for educational R&D differ. For conclusion-oriented research, university departments, associated institutions or independent research centres that are linked into the academic processes of quality assurance seem the obvious choice. For decision-oriented research, a possibly higher impact can be achieved if the results are produced by centres for policy analysis that are either internal to a ministry or are somehow linked with it. In general, however, if the budgetary means are available, a mixture of the two solutions might seem desirable, given that the groups engaged in policy-oriented and contract-based research and those working on discipline-oriented problems often need each other.

Receptivity to educational practice is an imperative on the policy side. This implies a multi-actor and multilevel communication model that can offer a variety of signals on the condition of education and the identification of problems. Research has only a partial role in the constant stream of messages from practice to policy and *vice versa*. It depends on the culture of the policy system if research knowledge is valued more highly then the claims of interested parties engaged in action. Besides culture, the various organisational arrangements for buying and conserving knowledge as part of an information management system also characterise the policy system.

In conclusion, in some countries there are (semi-) independent institutions that commission research and provide the link between the policy system and the research system. The mission of these institutions can differ from protecting science from external interference to imposing the goals of policy and/or practice on science. Their role as an intermediary agent for communicating problems and results among the three stakeholder groups – policy, research and practice – is crucial and hence often subject to criticism.

The main areas of educational R&D constitute different profiles for OECD countries. One profile focuses most of the attention on educational practice. Another profile, which is more policy-oriented in nature, invests in knowledge of the functioning of the educational system as a whole, in knowledge of steering, and in the relation between education and society. The sources of such knowledge are not limited to research but include statistical agencies, the school inspectorate and the work of advisory committees.

How policy and research relate to practice

The schools as consumers of the results produced by educational R&D are in a much less comfortable position than policy agencies. Means of empowering the schools to engage more actively in knowledge production and utilisation might therefore be needed.

Another evident need is for institutions that can effect the transfer of knowledge and development products from R&D producers to the consumers in educational practice. In this respect, the arrangements in OECD Member countries differ: some have centralised all services and vested the responsibility in one single national institution; some have regional service centres; and others have not really addressed the issue – here support services are diffuse, unstructured and depend on the initiatives and interests of individual researchers and practitioners. In such cases, the establishment of clearing-houses that relate school practice to R&D work in areas that are particularly relevant, such as curriculum development and innovations in educational technology, are likely to be beneficial.

Since the seminal work on *Planning for Innovation through Dissemination and Utilisation of Knowledge* (Havelock, 1973), much research has been carried out in the same direction, even leading to a specialised journal *Knowledge*. As Huberman (1987) has stated, the knowledge of research utilisation in social, including educational, settings is no longer in an exploratory but in a confirmative phase.

Traditional media for disseminating knowledge in educational practice are action-oriented short presentations of research findings, didactic instruments based on research, and developmental products tested for effectiveness in the classroom, offering new insights through continuous education of teachers and through conferences. Besides these normal media, there are other possibilities of transferring general knowledge into local applications. The role of graduate-level teaching in universities may be noted here.

Schools are certainly interested in educational knowledge if they can make the connection between their individual situation and more general issues. A successful example in one OECD country is a big evaluation project of the effects of policies for schools with many children from disadvantaged groups. Schools who participate in that nationwide research can buy a profile of the results of their own pupils compared to the national mean or the mean of a relevant comparison group.

The preparation of this "local" research knowledge needs an investment in transferring the knowledge. The costs of this additional transfer are paid by the schools or on a bigger scale by local government. The schools certainly use the information since further questions are raised. Examples where schools can gather further, often situational, knowledge are:

- diagnostic instruments to analyse their internal organisation;
- panel procedures to monitor the appreciation of the clients, mainly students and parents;
- validated norms on a national scale and for comparable groups of schools on indicators for the quality of the education process.

In several OECD countries, educational policies want to give more autonomy to schools whilst increasing their responsibility for the quality control of their own educational processes and, in some OECD countries, to account to their clients.

Finally, the quality of education is determined by the teachers. A teacher wants:

- influence on decisions regarding his or her own work;
- good informal contacts with colleagues;

- positive class and school climate;
- support and help in coping with problems;
- appreciation and understanding for work in the classroom;
- the ability to sustain and improve the professional content of his or her work.

The teacher as reflective practitioner must have the opportunity to discover. Teachers should give time and thought to the conceptual and empirical limitations of the knowledge with which they face their tasks. From probing their uncertainties and from self-interrogation, they could make their own agendas of what knowledge would be most useful to their enterprises. From this position they could move into the role of those who, given resources, might commission research or other forms of knowledge, or who might influence researchers to take on particular forms of research. This approach would involve time and effort but would be the way to strengthen a new professionalism at a time when teachers in many countries feel a loss of self-esteem under the duress of limited resources and shift of power brought about by increased managerialism.

Improving the research system and its relation to policy

Recent reviews of policies and strategies in the OECD countries highlight the changing context and directions for educational research in the Member countries. Complex societies and educational systems require a sound knowledge base for planning and decision-making, at both local and central levels. Because educational research has much to contribute to this knowledge base, the formulation of a long-term educational R&D policy is a key requirement. But this cannot be realised without a clear and long-term vision of the development of the education system itself. The objectives of a coherent research policy in education that is relevant to practice can only be decided if the broad contours of education policy have been clarified, since without such clarification and without leadership in the education system it will be difficult to define the role and weight of educational R&D in piloting policies at both the centre and the periphery. Hence, the use of the results of educational research in policy and practice can be successful only if a "revolution" can be brought about in the attitudes and perspectives of the various stakeholders, including key actors in practice, policy-making and research.

Political agents and the educational research community often operate at a long distance from each other, and that kind of mutual appreciation is often lacking. A dearth of systematic communication also besets the relationships between school practitioners and researchers in education and related disciplines. The research system can therefore be made more effective in some respects if the interaction among policy-makers, researchers and practitioners is improved. This naturally depends on which perspective is taken regarding the role of the research community *vis-à-vis* the policy community and practitioners.

The challenge of strengthening the involvement of practitioners is paramount but also difficult to realise. Laderrière (1990) mentions several obstacles: first, the dominating concept in several circles is of teaching and learning as an art, and the study and development of education as a separate scientific activity; second, the definition of the

position and role of teaching staff, which normally does not entail a personal obligation to systematically assess the outcomes of the teaching and learning process. Consequently, teachers are often not committed to serious initiatives in educational research. A third factor is that the average teacher has not developed competence in research methods, including action research.

Strategies for overcoming these structural problems may be based on incentives for researchers to involve practitioners in the design and actual conduct of school innovation projects, and to advertise and disseminate their findings more effectively. This conclusion is similar to the one reached by Kirst *et al.* (1991, p. 6), in a study of the ways in which the research system can be adapted to improve its relevance for policy and practice:

> "(...) connecting theory to practice is more than examining instructional effectiveness or devising new forms of professional development. It also means placing research in the service of teaching and school improvement. Teachers and researchers must be collaborators in constant communication with each other, but this will involve new roles for teachers and students".

The aims and means of improving the interaction between researchers, policy-makers and practitioners are discussed in the next chapter. The discussion will show that much is currently happening in the OECD countries. Examples are the creation of school-university partnerships and "professional development" schools, which are actual schools that also serve as laboratories for research and teacher training. Another example is a new policy envisaged in the Netherlands, according to which a share of public research funds is allocated to schools. This will empower practitioners to play a role in the formulation of the research agenda, and will make it possible for them to contract researchers and specialists in educational innovation.

Conclusions

In the early 1990s, the relatively low level of public funding for educational R&D indicates doubt among policy-makers and practitioners about the usefulness and relevance of such research. This attitude originates not only in the uneven quality of much research but is also influenced by problems of co-ordination and insufficient attention to research dissemination and reporting. This makes it difficult to raise additional funds, because policy-makers are not always convinced that more money will have the intended effect on school development and innovation.

While educational research in many countries is best considered as an immature field in comparison with other disciplines in the natural, social and behavioural sciences, educational studies have nevertheless been undertaken for a long time. Progress in the knowledge base of education and in the usefulness of research to policy and practice requires that an equilibrium must be found between the consolidation and synthesis of existing knowledge and the development of new ideas and insights.

Conclusions for action may be based on three interlinked premises. First, educational policy systems need to be critical performers in the complex process of identifying problems, setting a research agenda and behaving as active receptors and implementors of

results. Second, educational researchers should produce results which show reflectiveness on scientific theories, practical insights and policy constraints. These kinds of results appeal to people who learn and teach (or bring messages to society). Third, practitioners should join researchers and policy-makers in the quest for usable knowledge. All parties in research should play their own role, and interaction and linkage should not attempt to confuse or homogenise the separate roles. But ultimately, educational research will have to strengthen the knowledge base and the reflective practice of schools and teachers.

Chapter 6

Meeting the Interests of the Stakeholders

So far, this report has been mainly concerned with analysing the nature of educational R&D, the problems of confidence that it has faced, and its position in the different OECD countries. In the previous chapter, the possibilities of improving the relationship between producers and users of research were considered.

It is now time to look more closely at the nature of the multiple interests involved in putting knowledge to work in order to see how they might be better aligned and conflicts avoided. It is clear from everything that has been said so far that for disciplined enquiry to be put to use in the working life of education, social relationships are as important as the not inconsiderable issues of substantive content and focus and methods.

Negotiating the knowledge base

Educational R&D is a leading example of an area in which knowledge generation must comply with two conflicting sets of conditions upon which negotiation is essential. It must be rigorous and recognisable in the scientific community as responding to such academic values as a respect for logic, evidence and demonstrability. As far as knowledge can ever be "objective", educational R&D must strive to be so. The best of it contributes to the creation of "normal science" involving the testing and recreation of theory. At the same time, it must also be reflexive, for whilst at one end of its spectrum it might be concerned with the disinterested search for truth and the creation of elegant theory and explanations of phenomena which satisfy intellectual curiosity, it must also respond to the needs of useful knowledge from an extraordinarily complex and important sector of human activity. In other words, its reference groups are those of both the scientific and the practitioner communities.

These two sets of conditions may not easily be reconciled and the educational researcher is therefore required to negotiate between them. The two sets of values and functions can live in adjacent harmony. Indeed, responsiveness to practitioner needs – because it implies access to problems where evidence is actual and strong, and because the researcher's knowledge system is tested by those with perspectives different from their own – might itself improve the science. But a degree of differentiation needs to be

made between the role of the practitioner-customer and the researcher. Broadly speaking, it can be said that the agenda for educational R&D is, and should be, negotiable between those who fund and sponsor and those who perform it. Those who fund and sponsor will have a leading role in determining the problems to be tackled. In doing so, however, they will respect the need of researchers to incorporate scholarship and theoretical considerations in their tackling of problems. Moreover, those who research on education are likely to have views on what is relevant to practitioners. That, too, comes into the negotiation. Methods, however, are primarily the province of researchers, although they raise questions for the laity inasmuch as the ethics of research, access to particular groups, and resources, have to be matters of negotiation between the laity and the professional researchers.

These might be the formal ingredients of the negotiation. In fact, there should be a fruitful and positive relationship in which researchers recognise the power of what Lindblom and Cohen (1979) have called *Ordinary Knowledge*, and regard the process of negotiation on agendas as part of the data which should condition both their agendas and their methods.

A more difficult question, perhaps, is whether practitioners can in some way become researchers. This depends partly upon the tightness with which the definition of R&D is drawn. Thus, many important developments in education, particularly on the organisation of learning and teaching and the balance to be struck between formal and informal methods, have derived more from the observations of skilled practitioners than from the findings of formal research. This is an example of where development rather than research has led to more disciplined enquiry about why one approach works better than another. Teachers and administrators thus have access to experience which can be crystallised into more systematic knowledge. It then becomes a question of the extent of their training and the time that they can devote to converting such observational and developmental thinking into forms of knowledge which can be communicated, verified and transferred to other domains of both research and practice. New knowledge that is thus derived from the experience of practitioners needs to be systematised and formalised as a part of the general knowledge base of the discipline. This will require that formal criteria of validation be used and that the new knowledge should pass the same tests that would be applied by researchers. For these observational richnesses to flow into the knowledge base, to be part of an accumulative and intellectually convincing process, practitioners should work with researchers, or perhaps become part-time researchers, in the sense of learning how to engage in research that is convincing and strong and somehow different from the insights being generated through other inputs.

The next sections outline the various interests of policy-makers, local authorities, schools, parents, students, researchers and interest groups in the negotiation and sharing of these tasks.

Interests of policy-makers

A key concern is, indeed, the usefulness of educational R&D to practitioners in the schools, educational systems and higher education institutions. But equally important is

the use of systematically acquired knowledge to policy-makers. A distinction may be made between their knowledge or information needs, and their political needs.

Knowledge needs

Policy-makers use knowledge in planning what should be provided and in evaluating the effects of their programmes. Their knowledge needs are:

i) a well-founded perspective on the changing nature of educational populations, their size, their socioeconomic and ethnic make-up, and the state of the economy as it both nourishes the educational system and expects contributions from it;

ii) insights into the educational wants as presented by the multiple stakeholders, which can then be converted into a needs analysis. This may require a quantitative frame stating demographic developments and economic projections and forecasts of demand. At the same time, the needs analysis should be conditioned by "softer" data which incorporate analyses of shifts in stakeholder demands for different services, and feedback from users which gives some idea of the impact of policy;

iii) patterns of educational organisation as they support or control educational practice;

iv) the evaluation of the impacts of policies;

v) the costs and benefits of different policies;

vi) a picture of what is working or what might work in education. For example, what kinds of curricular, organisational patterns and differential applications of resources might affect the propensity of educational systems, institutions and practitioners to work more effectively?

vii) information on the working of the education system in lieu of the information derived from pricing mechanisms. Educational research can provide information about changing clients' needs and wants, and the extent to which they perceive that education is meeting them.

It is in area *vi)* that policy-makers feel the strongest lack in the knowledge base provided to them (Kogan, 1995). For the most part, educational research is able to offer case studies in which unique examples of beneficial outcomes or change are related to a host of contributing factors. Hypotheses for further research may be derived from single case-studies conducted in the field of education, but firm propositions, let alone scientific principles or laws, cannot be derived in this way. Meta-evidence emanating from many studies and research replicated over time, under different conditions and employing different designs and methods, is required in establishing propositions and principles for policy and practice. Mainly, however, educational research does not seek to establish such higher-order knowledge and it has been criticised as being either time- and place-specific, or so general as to be banal.

Thus, policy-makers would be right to conclude that educational research can help them define the universe within which they must work, and can help them establish more accurately the agenda of problems that need tackling. But the knowledge applicable to

policy problems is far more bounded and more likely to combine the results of research findings, the use of ordinary knowledge culled from political, journalistic and other sources, and their own sense of what is needed, politically and socially. As an aid to application, therefore, research mostly has an illuminative rather than direct usefulness – although policy analysis, as practised by some researchers, can bring together different forms of knowledge for policy use.

While research can have instrumental effects, directly influencing decisions, more often it serves to shape policy-makers' perceptions and agendas, as in Carol Weiss's notion of enlightenment (Weiss, 1980). It is for this reason that many policy-makers are supportive of initiatives to review and synthesise the findings of previous research. Meta-analysis in education is a priority because decision-makers consider that systematised knowledge about what works in education and what does not is an essential ingredient of a comparative knowledge base that is useful for educational policy-making.

Political needs

Social science research often has a function that can be described as political and expressive. For example, it is important for politicians and policy-makers to demonstrate a democratic belief in the critical testing of ideas and of the policies and practices that they create. They must be seen to be responsive to political, cultural and social movements, and show that they take on board reactions to the policies that they create.

Interests of schools, teachers, parents and students

Because so much of the usefulness of educational R&D will reside in its capacity to involve schools, teachers, parents and students in considering how best to perform educational tasks, it is important that practitioners should play a part in the formation of the knowledge base. At the same time, it could be too easy to entertain a romantic view in which all are involved happily in a mutually beneficial exercise without differentiation of role. The broad differentiations of functions between researchers and their clients and how negotiation might lead to forms of partnership were noted earlier in this chapter. The following are possible ways in which this might work:

- Local authorities responsible for education need much the same data as those required by central policy-makers, as described above. They, more perhaps than the national authorities, will need to have a secure grasp of the educational needs of their area and of the impact of policies and practices on their constituencies. It will follow that local administrators should be strongly involved in setting the agenda for, and lending support to, research of this kind undertaken at their local higher education institutions.
- Schools, too, need to be able to consider in depth the ways in which they can adapt their teaching and learning practices to ensure that they are meeting both the present developmental and the future employment needs of their pupils. It is likely, therefore, that schools will be involved in forms of disciplined enquiry as

they examine what their profile should be, how they relate to the wider community of parents and employers, and how they then formulate and evaluate their curriculum and educational organisation. This will require teachers individually and collectively to be self-interrogating about their practices. It should lead them to analyse why they are doing what they do, and how they might do it better. Reflection on their own practice might then lead them to see that there are areas of knowledge outside their own experience which should invite more systematic and disciplined enquiry, relying upon past research and encouraging thought about future modes of development. As has been said, this could involve teachers taking on the skills and functions of part-time researchers, or the process could remain at the level of development, with or without external researcher help.

- Schools need resources in order to collaborate in trying out innovative practices. They need a margin of staff time and other resources to enhance professional development, including research opportunities. They need access to training in theories and methods underlying the research in which they take part, and feedback from it.
- There is a strong case for any publicly funded research project to be steered by an advisory group in which practitioners and client groups such as parents, employers and students are represented (an example of such an arrangement was given in the previous chapter). They will help set the agenda, and apply reality tests to the findings of researchers. They can help legitimate the research, ensure that it has good access, and that feet remain on the ground.
- Research can be used for adversarial purposes. Interest groups may seek knowledge upon which to base their arguments for change. This is entirely legitimate as long as the political starting-point is well known and the research methods preserve full scientific integrity.

Interests of researchers

The interests of researchers in educational R&D evince themselves in several ways. Firstly, in principle they ought to be concerned with the disinterested search for new knowledge, and in doing so should be committed to the traditional values of a respect for logic, evidence and demonstrability of what they discover and formulate. Secondly, however, educational researchers are dealing with phenomena that are not fixed in natural time and space but are in part the results of creative forms of enquiry and practice. They need, therefore, the right to make statements that are "scientific" in the sense that they are founded upon rigorously acquired knowledge, at the same time as they need freedom to be critical, constructive, clever and creative.

Researchers also need a sense of being useful. They need to be heard by policy-makers and practitioners, and they need to feel that their work might have some impact on what happens in the world of action. Other interests of research workers are more mundane but are increasingly overlooked as market mechanisms for research are put in place. Too often they have to contend with "immature" customers who demand

"quick-fix" solutions to virtually intractable problems. In some countries, invitations to tender give researchers no more than three or four weeks in which to reply, in order to gain a contract to be started a few weeks after tendering for a contract. They may have no part in negotiating the objectives of the research and no clear property rights over the results. It may be possible for large and well-founded specialist research institutions to respond quickly and *ad hoc* to funders' demands, but for many small groups and individuals working as teachers as well as researchers these growing practices create problems.

It is possible to distinguish between different legitimate time spans for research. Some research must take time to conceptualise, design, implement and analyse. Some requires a longitudinal perspective lasting a number of years. Other disciplined enquiry, however, can involve researchers in assembling knowledge which already exists, to reconceptualise it and to apply it to specific problems of policy and practice, and these can form reputable short-order analyses for direct use. Researchers also need mobility from their research base, into other research, policy or practice jobs. They need forums for open discussion between members of the policy, practice and research communities, and good in-service training and updating facilities.

At the same time as policy-makers need to be sympathetic to the problems of researchers' time-scales, so researchers need to become more efficient in their use of time and show more understanding of policy-makers' need for help on acute problems. The planning of research projects needs to be a mutual exercise between those who commission and those who execute them. They should jointly consider time-scales, a feasible scope for projects, the use to which the research will be put, and its eventual "ownership". This last point is important. Because criticism and debate are essential and indispensable elements of the scientific process, it is in the interests of science that the results of research be disseminated in ways that invite scrutiny. Hence, research which is not published does not truly contribute to the regular process of science.

The delivery of a commissioned research report often raises questions about the style of writing and the presentation of policy conclusions. Researchers need to keep in mind that elaborate scientific reports are not suitable as a means for communication in many settings of policy and practice. Researchers are also well advised to manage some restraint in the formulation of the policy implications they think a research study has. Policy-making is not their mandate, as doing research is not the mandate of policy-makers. In general, policy-makers in a strong position require information elements, and they will tend to formulate their own conclusions based on the available information. This does not mean that researchers cannot act in an advisory role to policy-makers who know what they want. Researchers can be consulted at strategic moments in the decision-making process, by involving them in the policy discussions.

Conflicts between stakeholder groups

In a democratic society there is no room for uniformity of perspectives or automatic agreement on policies. Each stakeholder group is entitled to state its wants and to assert

them to the needs to which society should pay attention. It also has what has been called its own "assumptive world" – that is, the world of values and knowledge based upon its own experiences, values and social pressures.

These different assumptions and needs have to be negotiated if society is not to suffer from conflict and immobilism. The relationships, therefore, between those who commission educational R&D, those who perform it, and those who use it, must be those of negotiation and exchange, not subordination of one group to another. The importance of joint consideration of the objectives of research and of its feasible limits and outcomes has already been emphasized.

The generation of R&D requires the interplay of several different roles. Much R&D will be generated by the actions of researchers who follow their intellectual interests and are concerned to satisfy curiosity about how the system works and how educational processes might have an impact. Or, research might be invoked by policy-makers or by interest groups who need help in clarifying an agenda and tackling it. Or, research might arise from the attempts of the self-interrogating or reflective practitioner to create boundaries within which practice problems can be identified and meaningfully tackled.

Good R&D, therefore, involves careful collaborative analysis and negotiation. Researchers will have networks not only in their scholarly communities but also among policy-makers, interest groups, practitioners and client groups. It must be emphasized, moreover, that whilst R&D depends upon command of specialist techniques, in the reduction of problems and tackling them in a way which is demonstrable and transferable, so at the same time it is not dismissive of "ordinary knowledge". For example, a public perception that standards in the schools are falling may not be borne out by rigorous and widespread testing over time. But the fact that perception exists is itself important data for the researcher and may be representing a reality which could escape more scholarly analysis.

Educational R&D must therefore expect to meet competition from journalists and policy-making or influencing groups who themselves put into circulation different forms of knowledge. Also, many governmental institutions themselves have their own R&D capacities which are most usually committed to the solution of particular problems but which nevertheless form part of the universe with which other educational R&D practitioners should work collaboratively.

The accountability of researchers is equally complex. Their first accountability must be to the scholarly community which will receive, review and criticise their work. If they cannot stand up to the tests of scholarship they are no different from other opinion formers such as journalists, consultants and politicians. Their second accountability is to those who sponsor their research work. It has been indicated that in educational R&D, in perhaps the majority of cases, negotiation over the objectives and conduct of the research between sponsor and performer is essential. This does not, however, dismiss the need for entirely independent research, more likely to be funded by private foundations or from institutional resources and from government. In those cases, the accountability rests entirely on the relationship with the scholarly community. Other issues of accountability concern the scrupulous regard that must be held for the ethics of research – that is,

negotiating conditions of disclosure, observing agreed roles of confidentiality, making due reference to the work of others upon whom one's own work depends, and the like.

There is a further responsibility, if not accountability, to the next generation of researchers. The "graying" of higher education has meant, in certain countries, that educational R&D has not proved hospitable to a new generation of younger researchers. Experienced researchers with access to resources have a sure responsibility to recruit, train and nourish the work of younger researchers which will not only safeguard the future of educational R&D but also bring in fresh perspectives on a changing world which is the scene in which educational R&D must live.

Accountability should, therefore, be of three modes: it should be professional (answerability to one's scientific peers), managerial or contractual (to one's own institution and to the sponsors of research), and consumerist (to the larger group of clients). These will be in tension with each other, and a negotiated order is necessary.

Approaches to conflict resolution

Although tensions and conflicts are inevitable and even necessary ingredients of development, some disruptive consequences could be minimised if interests were better aligned. Several approaches to conflict resolution are mentioned below.

Aligning interests

If an R&D system is to address the perspectives of producers and consumers of research, a good starting-point is their common interests. Producers and consumers share a desire to promote schooling in all its multiple aspects; consideration of stakeholder interests in R&D should focus on opportunities to cement that common interest.

However, discussions of the perspectives of producers and consumers of educational R&D frequently focus on their differences. For example, it is often stressed that the two groups operate in different time frames, use a different language, and respond to different incentive systems. In the main, it may be said, users want clear and simple answers, whereas researchers focus on complexity. However, preoccupation with the differences between the two producer and consumer communities restricts discussions of the challenges facing educational research to a fairly standard list of frequently rehashed problems (Fuhrman, 1994). This concluding section will therefore focus on challenges in the improvement of educational R&D that arise from the commonality, rather than the differences, in producer and consumer perspectives. The basic assumption is that both communities are committed to the desire to improve schooling.

Uniting consumers and producers in creating and utilising educational R&D requires that attention be paid not only to the various functions of educational R&D but especially to communication and negotiation in the processes that link the two communities, researchers and those involved in policy development and professional practice.

Instrumental uses of educational R&D

The general picture drawn of the instrumental uses made of educational R&D is depressing. Policy-makers might most often use research findings to support a particular case in adversarial and selective fashion, but they rarely consult the full range of existing knowledge or consider systematically what knowledge might be useful in seeking policy solutions. Nearly 30 years ago, Bloom (1966) inventoried 70 000 pieces of educational research completed in the previous 25 years and found that only 70, or one in 1 000, had had any significant influence. A similar assumption is currently held by many policy-makers in the United States (Tomlinson, 1994).

Moreover, the predominant belief among those who wish to see educational standards improved by advancing practitioner professionalism is that research should be considered primarily as a way to greater wisdom and self-reflection. The insinuation of these qualities should have an instrumental pay-off inasmuch as they should encourage more teacher commitment to their profession – although self-reflection is obviously needed in those who must communicate knowledge, techniques and values to others. But the reflexive version does not respond easily to the usual meaning of instrumentalism, which implies a strongly contingent relationship between a research effort and a visibly usable result.

Yet there are many examples of how in the long run, research thinking does permeate policy-making. For example, in the United Kingdom the research findings by Douglas (1964) and others about the wastage of ability of those from the lower socio-economic classes greatly reinforced the case for the expansion of higher education. The work of psychologists made the case for the selective system of education, and the work mainly of sociologists later helped to demolish it. These examples also, however, show the limitations of research. All of them gained salience not because of their intrinsic "truth" but because they were politically salient at the time they were promulgated. Research helped to criticise existing policies and inform the political agenda. It could not directly affect outcomes.

Client-centred research agendas

The kinds of knowledge upon which policy-makers and practitioners might build joint research agendas have been mentioned earlier in this chapter. The fact that the usefulness of research is likely to be illuminative, indirect and indeterminate does not, however, weaken the case for sustained attempts to make sense of the way people learn, the conditions within which they do so, and the outcomes of learning procedures. Indeed, the more complex, multivariable and uncertain the patterns, the more likely are practitioners, policy-makers and the public to need information and insights into what education is doing and what it achieves.

If educational research has not instantiated itself in the world of practice, this could be for several reasons. Researchers' agendas might be irrelevant to their needs – although many educational researchers have themselves taught or been otherwise active in education. Much of it is based on empirical work in schools and has required their acquies-

cence, if not active co-operation, to be performed. A more plausible explanation at both practitioner and policy-maker level is likely to centre on feelings of ownership and involvement. There is evidence from another field (Kogan and Henkel, 1983) of the ways in which different policy-makers within a government department differ widely in the extent to which they perform actively as "customers" for research. In some cases, and particularly those areas where the issues are long-standing, intractable and unlikely to yield to quick-fix solutions, agendas are built up carefully and slowly between policy-makers, other consumer groups and the researchers themselves. Objectives are agreed and researchers given a full voice in reading out policy implications. Such a sharing of objectives in agenda- setting has been reported in respect of Irish R&D programmes (Kogan, 1995).

It is thus suggested that in formulating research plans, sponsors should pay particular attention to building client-centred research agendas. In doing so, however, the relationship between the participants should be carefully worked out. Teachers, policy-makers and other practitioners should work with researchers in identifying problems and become collaborators in the research through the identification of sites, situations and data, and through the testing of results and the elaboration of their implications. At the same time, the researchers' responsibility for ensuring that research findings are reliable and valid should be respected.

This would be a better way of creating agendas than attempting to map the existing world of knowledge and attempting to fill the gaps. Encyclopedism suffers from the disadvantages of embedding futures plans in what already exists, and also of presenting R&D with impossibly heavy programmes to try to complete.

Avoiding false consensuses

Educational values and policies are and should be contestable. It follows that agendas and the interpretation of research findings will be equally contestable. The most healthy state of affairs in education is not one in which there is full agreement but where there is constant and reiterative challenge to assumptions and practices in forums in which conflicts can be expressed and debated. In this way, education's clients and practitioners will have a wider range of options from which to choose and will become wiser from the effort of chosing.

How to organise negotiation

Educational policies are and should be a product of many conflicting interests. Policy-makers should represent the broader public interest. Teachers and their institutions must sustain conditions for good professional working. Clients' groups have a right to know about and to be able to criticise and contribute to the curriculum and other education agendas.

The perspectives of different interest groups constitute several contributions to educational R&D. First, they should be recruited to support the cause of disciplined enquiry. Politicians need convincing of its utility. They tap into interest groups who can

help legitimise the research enterprise. Second, their perspectives are themselves important sources of data on what should constitute the research agenda, the wants that are experienced by various clients of education, and the extent to which needs are being met.

An example of an attempt to meet these needs from the United States is the Consortium for Policy Research in Education which has "a multi-tiered governance structure for an iterative process of client-researcher topic determination" (Fuhrman, 1994). A national advisory panel consists of elected and appointed policy-makers, and 26 national associations represent the range of constituents. A management committee of the consortium's researchers uses the advice thus accumulated to determine research topics and approaches. As a result of consultation, which takes place through several modes, the policy agenda has evolved in response to policy change.

Inasmuch as needs analysis is a part or important precursor of educational R&D, the impact of policies and practice on interest groups is an essential source of data for policy-related research. Research groups should therefore consider how to compile statements of the way they intend to involve interest groups which will show them why they should support research and what they will get out of and contribute to it.

How to evaluate the R&D system

How to evaluate and steer the R&D system, given its multiple interests? Just as research agendas should be compiled with several interests in mind, so their evaluation, and that of national R&D systems should be made using a range of criteria. The totality of a national research effort should be assessed to show not only the substantive areas but also the levels at which enquiry has been directed. Research should be assessed not only for the viability of its methods and scientific outcomes but also on the criterion of who has benefited from it. Some starting-points for this process were suggested in Chapter 4.

Given these criteria, free enquiry should not be limited by the needs and objectives of its consumers. Knowledge is often accumulated slowly and unsystematically. If this were not so, it would be easier to predict the state of education or the economy more successfully. Perceptions of social states are often borrowed and adapted from the experiences of other countries, but they are at the same time never wholly transferable from one site or time to another. The total map of research can reveal no more than an ordered eclecticism at best.

Moreover, to limit research to that which is perceived at any one time to be useful is to confuse it with the operational intelligence – which may, but need not, derive from research – necessary for administration. The research mandate must be to think the unthinkable, to reassemble accepted truths into new patterns of meaning, and to identify the sources of problems newly emerging and patterns of action and organisation which hardly at present exist.

Conclusions

In this chapter, ways of negotiating the knowledge base between the many stakeholders in educational R&D have been explored and each of their particular concerns specified. Their needs differ, but to some extent only. Ways of negotiating out immobilising forms of conflict have been discussed. Client-centred agendas for R&D – which are advocated – do not demand over-deference to short-order and instrumental demands. We can look forward instead to strengthening through negotiation the shared interests of the many groups in the improvement of education.

A complex of relationships is thus being argued for that will benefit from the fruitful tension between competing interests. The policy community has pressing needs to meet which researchers can help it face, possibly by short-order enquiries into the state of existing knowledge on a problem area and by helping to identify possible implications and solutions. It also has longer-term needs for critique and reconceptualisation. The research community wants its work to be used but also requires sympathetic support, which must include access to resources, in pursuing more long-range, speculative and critical studies. Both "usefulness" and critique are desiderata for a democratic society which is unafraid to look beyond existing states.

Chapter 7

Improving the Knowledge Base: Policy Challenges and Conclusions

Educational R&D is not an area where governments can easily take effective action. They must consider its links with science policy at large, and face both practitioners and researchers as they look for the best modes of interaction and the right priorities. Today, governments not only appear to realise the importance of creating appropriate conditions for educational R&D as an element and contributor to the national knowledge base, they also increasingly seem to be aware of the problems inherent in creating a "good" R&D system.

In this final chapter, some of the issues and problems analysed throughout the report are looked at, taking into account the views of both the producers and consumers of such research, before the report offers conclusions and propositions for action. The conclusions will focus on the lessons and implications for the role of governments in designing and implementing an educational R&D policy which is coherent and yet able to be adapted to suit different situations. All the systems, including the more developed ones, have unique characteristics which derive from many historical, cultural and other factors. Alternative instruments are therefore available to R&D policy-makers in the various countries, and they will work differently depending on purpose and position in the R&D system.

Embedding educational research in science policy

Should governments have a national R&D policy for education? In all countries, education constitutes one of the largest sectors of public activity and one of the largest employers of professional manpower. Disciplined enquiry into its problems forms a natural part of any national science policy. Educational R&D thus belongs to the science system, although it is rooted in the educational policy system or in the educational support infrastructure. This split identity is a source of complaints about educational R&D, for example insufficient interaction between research and the information systems used for policy-making, or the lack of linkage with educational practice.

Two models describe the relationship between science and innovation in the world of application. The Olympus model represents the more traditional picture of science located in an "ivory tower": produced fundamental knowledge has to be transferred for application in ordinary policy and practice. In the Agora model, science is just one of the competing forces in the innovation of education and the influencing of policy (van Oijen, 1988). In searching for a role for governments in educational R&D, decision-makers have to consider the question as to where their policies, if any, fit: in Olympus or in Agora? Clearly, decisions about the sources of funding and the priorities for research are linked with whether Olympus or Agora is predominant.

Knowledge of education comes from many sources which must prove their worth by their effectiveness and their own intrinsic value. In both models it is possible to use the three general approaches of contracting research, or a combination thereof:

- pursuing the "let many flowers bloom" strategy which, because it is not known what kind of research may produce most value-added in the long run, will involve the subsidising of many ideas and competing claims for knowledge;
- applying the contractor-client principle, which will involve establishing and strengthening quasi-markets for knowledge;
- focusing on the creation of sufficient institutional capacity for knowledge production and innovation in education, which will imply that funds be concentrated and distributed over several years to support "excellent" development centres and research institutions.

These ways of thinking about the role of science policy at the national level determine the functions and research profiles of a country, and they will in turn set the parameters that steer policies for educational R&D. A degree of general accountability is important in view of the fact that policies for educational R&D are usually in the hands of educational policy-makers who are, rightly, sympathetic to its aims and cannot be entirely objective about them. If educational research funders were to give an account of their policies to a more general governmental body, consisting of scientists as well as policy-makers, some of these dangers would be offset.

Therefore, it is important that educational research should also fall under the purview of general scientific policy because it should conform to generic practices of good research, and there must be public accountability for the money spent. There is also competition for funds, and somebody has to set priorities.

It is desirable that educational R&D should benefit from work sponsored in neighbouring fields of public concern. Thus, much work on the health service concerns such issues as the career destinies of nurses, the organisation of multiprofessional institutions, and the definition of quality – all subjects equally within the range of educational research.

If, however, educational research comes under a general science research ministry, it may suffer from the premium placed on "hard" science and technological research, which is always assumed to produce more tangible pay-offs. Educational research needs to be able to resist the "unitary fallacy". Education has its own research and practice concerns and its own interest groups who form the first and essential context within

which research can best take place. Goals at the different levels – national, intermediate, local and classroom – are different in kind, and research agendas would have to give space for many value sets, interests and levels of operation. It would be difficult for generalist science policy-makers or funders to place educational research into this whole complex of financial priorities, problem definition, and into the chain of research, development, dissemination, implementation and evaluation, all to be followed by debate about implications in the policy and practice communities. Efforts to "co-ordinate" educational R&D with other areas of science policy in any over-rigorous sense would not only be inimicable, therefore, to educational research finding its own identity but would also be likely to fail.

If there is no structural differentiation in the organisation of R&D, whether in institutional structure or in the programming of the different knowledge products, scientists need to master different skills and competencies. On the other hand, if professional specialisation is encouraged, then additional measures are needed for ensuring that sufficient interaction between the two occurs.

Deciding on priorities for educational R&D

It was noted in Chapter 3 that educational research does not depend on a single discipline nor does it constitute a discipline of its own. It follows that a total agenda for educational R&D would be broad, deep and eclectic. Where necessary, it would go deeply into a disciplinary area such as psychology or economics. Or, in examining school organisation it would conduct specialist studies involving concepts from organisation theory and political science. In other cases, it would cut across the disciplines or ignore them altogether.

Given the strong case for eclecticism and reflexiveness, can priorities be set? They will be set in any case because of resource constraints and because of the preferences of both researchers and clients. Yet attempts to prioritise run up against methodological and political difficulties. There may be attempts to make an inventory of policy problems and existing research and then to identify the lacunae. But this suffers from the problem of "encyclopedism" (Kogan and Henkel, 1983) which is twofold – the sheer length of the lists makes it difficult to derive priorities from them, and there is a danger of predicting future needs from present circumstances. Priorities would have to be defined between all kinds of incommensurate issues – policy problems, practical problems, and types of instrument, for example.

Yet the opposite solution of serendipity – allowing both researchers and client groups to follow their own interests – can lead to major issues being omitted and to the creation and perpetuation of the two separate worlds of the academic and client communities. Obviously, therefore, there has to be a mixture of systematic survey of the existing field and some kind of futurological brainstorming by the principal interested parties. Key problems will surely present themselves – it is not too difficult to find the, say, ten most vexing problems for practitioners which will also meet the intellectual concerns of researchers. In the event, a good mixture of research between policy and practice and

levels of the system should be sought, and researchers should also be encouraged to map connections between them.

In allocating funds for research, national and other authorities need to consider creatively ways in which the principal actors will be able to most fully play their part. If schools are to participate in research, it should follow that time spent by teachers on research activity should be built into time and salary budgets. The even more radical proposal, advanced for example in the Netherlands, that schools should be given the capacity to fund or "buy" research has already been noted. These provisions would require schools to have skills and defined objectives, well related to their curriculum and other policies, for acquiring specific knowledge. If schools can buy research and can influence demand, then the market for research knowledge will be radically altered. It could also provide incentives at the margin for researchers to collaborate actively with schools.

In devising research budgets and programmes, national policy-makers are faced with a central problem of time-scales. In general, they need short-order analyses which will assist with the stating or solving of problems within a political time-scale. But the best research needs time to survey existing knowledge, to set up appropriate methods and access, to conduct fieldwork and collect the necessary data, to analyse the data, and to write up the results. An even longer time-scale is required because of the need not only to undertake research but to link its results with those from other sites and other fields. This might involve scholarship rather than research, something that tends to be neglected because of the pressure to complete a project and secure a contract for the next one.

The failure to accumulate and refine knowledge also has something to do with the career patterns of researchers. It is often senior professors who supervise a project whilst taking a leading role in teaching, institutional management and administration, and engaging in other research and scholarly activities. They are assisted by younger and untenured staff on short contracts. In neither group is there likely to be a sufficient margin of time for reflection and synthesising knowledge.

Scholarship – the reordering and reconceptualisation of existing knowledge – is an essential part of the advancement of disciplined enquiry and can be found in review articles, advanced textbooks, or other works of reflection and interpretation. It is an activity insufficiently undertaken in the social sciences, although it often forms a leading role in the study of the humanities. Scholarship could codify and interpret research in order to improve the setting of future research programmes and to ensure that awareness of useful research already undertaken is not ignored. It requires, however, time for its successful completion, and this is becoming scarcer as the requirement to enrol more students and to secure income and research grants becomes more pressing.

In conclusion, when deciding on priorities, it is suggested that stakeholders, funders and researchers should jointly consider future agendas. The cultures of decision-making in the different groups are certain to be quite different. Policy-makers have to reach decisions, and that involves the reduction of multiple interests to those decisions which can be implemented. Interest groups are never likely to welcome their interests being "reduced". Researchers in principle do not want to call for closure on any issue of importance. They will regard the truth as contestable and provisional and in need of

reiterative testing and replacement. These cultural differences have impacts on views about priorities and budgets. They will also affect opinions on knowledge rules and the time-scale of research. Deciding about procedures for joint national and international agenda-setting, and for building an international knowledge base and information system for education and training policy, will be a difficult and long-term process because such cultural differences also extend across national borders.

Organising and managing educational R&D

In *The Organisation and Management of Government R&D*, Lord Rothschild (1981) advised the British government to use the contractor-client principle to improve the relationship between policy-makers and scientists. This principle would ensure that those who explicate their wishes and pay for research will have a better chance of getting the kind of results they expect and, having paid for it, probably will profit from those results. Time and experience have shown, however, that the application of the contractor-client principle is not straightforward, since many of the conditions that limit the usefulness of mechanisms for linking policy-makers and research also apply to the systematic arrangement of the contractor-client relationship.

In Chapter 1 the cases for and against applying quasi-market principles in organising and managing educational R&D were noted. Some of the strengths as well as the problems emanating from the use of market principles in education were pointed out. Some lessons and their implications are now considered.

Locating market principles in educational R&D

As the functions of research are manifold, research products likewise have chameleon qualities. Claims and promises by producers, expectations of clients, changing policy contexts, and even disappearing problems can influence the nature and meaning of the product. Many OECD countries have gained useful experience in how to commission educational research under these conditions, and many university departments of education and affiliated educational research institutions which depend on such research for their survival have also had to work their way through uncertainty.

Even if created artificially through policy intervention and targeted incentives, there is a demand for research services, and there are suppliers. There is also a degree of competition among institutions and individual researchers for contracts and grants. In that sense, therefore, quasi-markets for educational R&D already exist in many OECD countries. The question, however, is whether the current arrangements work and whether they are meaningful.

All quasi-market approaches to educational R&D have two objectives in common. First, an attempt is made to create interfaces between the producers and consumers that are expected to stimulate demand. Second, ways are sought of introducing elements of competition that are believed to influence price-setting, quality, and efficiency in knowledge production. Thus, typically, a forum is created composed of representatives of

stakeholder groups – such as policy-makers and teacher unions – that can decide on priorities and can influence the allocation of research funds to programme areas and even individual research studies. Furthermore, the use of bidding procedures in the commissioning of educational R&D is becoming more and more common in the OECD countries. For example, there can be a limited tender procedure whereby some research institutions or university departments can submit proposals to a research council or agency. The funding decision is then taken on the basis of a price and quality comparison, and the previous track record of the research groups submitting proposals affects the decision.

But problems beset these arrangements, too, since their success crucially depends on who formulates the research questions and for what purpose. A government agency or a committee of educational institutions using government funds operates as single actors on the demand side. In addition, they are also in the position of a consumer who can choose between several knowledge products. The problem, therefore, is that the demand for educational R&D can become too one-sided. Governments – or specific government agencies – have limited funds for producing and acquiring knowledge of education. When confronted with a problem, they are therefore faced with alternative choices, for example spending money on commissioned research, hiring a consultant, enlarging the information management system, handing the question to the school inspectorate, or leaving it to the initiative of others.

The introduction of quasi-market principles in educational R&D can thus have certain advantages and disadvantages. On the positive side, one notes that market approaches can improve the efficiency and cost-effectiveness of the process of producing research knowledge, not least by introducing and strengthening competition among the suppliers both within and outside of the universities. A second albeit not self-evident advantage may be that the quality of research can be enhanced. A third point may be that the research knowledge locates more rapidly in the decision-making process, but this can be expected to work only if the government as the commissioner of research is not an anonymous bureaucracy and the relevant policy-makers take part actively in the commissioning and review of research and in the subsequent absorption of the results in the information management system. Obviously, inside the administration the importance of strategic knowledge has to be recognised and valued.

There are also drawbacks. A monopoly on the demand side can lead to the underpricing of research and hence to lower-quality work. Research is needed not only to support policy-making but also to play a critical role. A government monopoly on agenda-setting and the commissioning of actual research can work against this critical function if the authority in charge seeks to limit disagreement and diversity in the various functions of research.

In conclusion it may be said that the use of incentives as a means of steering the R&D system in education will increase the likelihood that production will be efficient. In turn, such measures will also alter the division of responsibility and hence the accountability of the various stakeholders. But if governments accept the challenge of steering the R&D system by setting certain parameters for the market, then they will not only have to

become accustomed to criticism but even accept the challenge of sponsoring research that may turn out to be critical of government policy.

The arrangements we propose involve ensuring adequate attention to the need to continuously generate, sustain and accumulate knowledge and insights and to maintain networks, through the creation of "excellent" research institutions (see below), while at the same time instilling and reinforcing competitive practices. This is expected to lead to a modified market structure, in which the state, responsible as it is for offering good education and training, must play an active role both as non-market sponsor and as bidder in the market and not simply as ring-holder between contending and competing parties.

In promoting competitive practices for educational R&D, governments should consider ways of opening up the research system to competition and impulses emanating from abroad. As education and training policy is a matter of national sovereignty, educational R&D is likewise and rightly closely tied to national concerns. But while policy-making is increasingly being brought into an international arena, educational R&D often seems to stay too firmly tied to national conditions. In order to remain relevant, the international and comparative dimension of research should be strengthened. This might be achieved if governments open up their nationally based and protected quasi-markets for educational R&D, for example by pooling R&D resources, introducing international agenda-setting and bidding procedures, establishing joint and long-term research ventures, building up "excellent" institutions with international profiles, encouraging mobility among staff and students, and facilitating the use of international information highways for the research community.

Market-oriented policies may take many forms, and advantages and disadvantages may be noted. But from the perspective of government it would seem natural, for example, to allow a Finnish researcher to compete for research funds available in Denmark or Sweden, or a Dutch researcher to apply for grants disbursed by the Canadian, German or United States governments. It would likewise seem advantageous if, in councils and committees responsible for setting priorities and evaluating research applications, there would be representation of national stakeholder groups complemented with international expertise.

Programming educational R&D

In programming research for a specific problem domain, it will be necessary to ensure a balance between coherence and focus on the one hand, and diversity on the other. Among the means of strengthening programme coherence might be: recognising that the growth of knowledge in specific problem domains needs a degree of steering; reserving capacity for theory building and for the periodic evaluation of the progress achieved; investing periodically in trend reports; launching each new research programme with an analysis of the problem definitions employed in previous research; undertaking periodic syntheses of the findings of previous research; paying attention to the gaps in research knowledge; ensuring a focus on the key explanatory variables and especially those that may be alterable by policy intervention; ensuring that all research projects operate within an explicit framework; connecting other projects to the heart of

the research programme; and paying attention to the need for balancing long- and short-term research.

Among the measures for safeguarding programme diversity are: offering opportunities for prospective and future-oriented studies as well as strategic research; emphasizing a multidisciplinary orientation; gathering and using knowledge created by other relevant fields such as demography, policy analysis, cognitive psychology, and economics and sociology; paying attention to the need for an international and comparative knowledge base in education; ensuring that the research programme is not limited to the investigation of education processes but also includes the assessment and evaluation of the instruments for educational policy-making such as financing, steering by goals and laws, and management by speech and rhetoric; in medium-size and large systems, creating specialisations at national and international centres in order to encourage and maintain competition; organising a self-evaluation function in the R&D system which promotes free and open debate.

Creating "excellent" research institutions

Wherever the base for research is taken, in practice or in the disciplines, there is an evident need to establish and create "excellent" institutions. Where they already exist, the benefits in terms of sustained enquiry into issues of public importance have been well demonstrated. Normally, excellent research can also be carried out by teams or units within universities, which have the advantage of contact with researchers in other disciplines and commitment to the training of the next generation of researchers. Their location varies according to the research and higher education structure of the different countries. Some are independent research institutes, and their capacity to work at research without distraction from other related tasks may be a factor making for strength.

Whatever the location, certain conditions for the creation of a healthy and useful research system can be noted:

- Centres are needed with well-established connections with the worlds of policy and practice.
- Centres must have the mandate and resources to engage in the full range of R&D, from fundamental research to applications, and policy-related short-order analyses.
- Centres need sufficient core funding, on a rolling budget, to ensure that longer-range work, including independent forms of research and scholarship and the training of researchers, is not squeezed out by the need to complete short-term projects.
- Centres should have sufficient funds for dissemination and for testing findings with other researchers and the various user groups.
- Centres must be exposed to the flows of research knowledge and insights developed internationally; therefore, they should be encouraged to play their part in the emerging global knowledge-based economy and learning society.

This last point may need some clarification. Current arrangements for the internationalisation of research rely heavily on measures to promote the exchange of staff and students. While attractive for many reasons – culturally, economically, politically – the effectiveness of such measures may be enhanced if the focus were to be less on the financing of brief exchanges and visits abroad and more on long-term engagements in joint research projects. Since basic research often requires a long time span to come to fruition, commitments need to be long-term as well. Basic research therefore stands to win if governments were to pool resources and build up joint research centres with a penchant for excellence. Jointly funded federal and state research centres and laboratories have existed for decades in the United States. Against this background, one may ask whether the governments of OECD countries might want to consider establishing a limited number of joint research centres, much like the Max-Planck institutes founded in the Federal Republic of Germany in the years of postwar reconstruction. Such joint centres might be given basic or applied orientations and they might have sectorial or thematic foci, for example lifelong learning, higher education policy studies, curricula studies, or evaluation, assessment and measurement in education.

The policy system's handling of research

For policy-makers to become interested clients, they must be involved in the setting of the objectives, timetable and expected type of outcome of research. This would require a collaborative and exchange relationship in which both sides accept and benefit from the distinctive elements of each other's functions in a joint enterprise. At the same time, policy-makers must help researchers retain their intellectual independence. They must recognise that not all the work they fund will have immediate or apparent policy pay-offs. This would make it possible to attract and retain better quality researchers to policy-related research.

Policy-makers should also be willing to help test findings in terms of both their internal logic and the feasibility of any recommendations arising from them. Reciprocally, it is important that researchers take care to present their findings in such a way that implications can be read from them.

Mechanisms for linking policy-makers and research can operate at different levels. A Ministry of Education, for example, might have two distinct forms of official linkage. A "customer" division will commission and receive the results of the research. It should act to ensure that results are taken critically and seriously and that the relationship is continuous and positive. At the same time, there may be a research division whose task it is to advise and criticise the methods adopted and the technical competence of the work. Both of these roles can operate constructively if the right task definition and relationships are formulated.

Beyond these operational levels, links might occur through steering committees for projects of whole units or institutes, both nationally and internationally based. Again, relationships should be both critical and supportive. A project steering committee can advise on issues of access, methods, presentation of results, their policy implications and dissemination. Steering committees for an institute or unit can help it formulate its

portfolio and lend it both scientific and political support. Both kinds of steering committee could be a channel for the expression of policy, practitioner and other interests, including international ones.

Recommendations for improving the knowledge base

This report has emphasized throughout that the utility and quality of educational R&D depends not only on the quality of researchers but also on the institutional arrangements for their connection with and support by policy-makers and other practitioners. The report therefore offers conclusions which are concerned with both the substantive content and the sponsorship and production of educational R&D. The links between these considerations are strong because ultimately research in this field is intended to cause change.

Drawing on the preceding chapters, this section brings together recommendations for improving the knowledge base of education policy and practice. The conclusions are organised around the following sequence: defining educational R&D; moving from uncertainty to support of R&D; tuning the interactive model; bridging the gaps; employing teachers as researchers; identifying the knowledge needs of the stakeholders; improving communication in the R&D system; and improving international co-operation.

Defining educational R&D

It was noted in Chapter 2 that the understanding of what constitutes educational R&D depends on the definition ascribed to education. The choice made here is for a broad rather than restricted definition of education to include educational experiences received outside those obtained in systematic provision. An operational definition developed from principles suggested in the *Frascati Manual* is proposed in Chapter 3.

Moving from uncertainty to support of R&D

Although there is a revival in the confidence shown by different countries in the ability of educational R&D to contribute to educational policy and practice, there is uncertainty about the quality and applicability of what is at present produced. In part, the lack of confidence results from lack of connection between the two sets of institutions.

As a result of lack of knowledge or confidence about its applicability, educational R&D is underfunded both as a proportion of general educational funding and in comparison with other publicly funded R&D. Yet additional investment in educational R&D is all the more important because the political and social context in which education takes place is constantly changing; the changes over the last 20 years have been particularly wide and deep in their implications, and the emerging knowledge economy and learning society hold promise of ever more dramatic changes.

There is an urgent need in many countries to review the recruitment and career paths of educational R&D personnel to ensure that the returns on societal and individual

investment in training are maximised. There is also a need to consider reducing the dependence of the educational R&D effort on the number of teaching staff in education faculties in higher education institutions, perhaps through the creation of specialist, even full-time, research teams in higher education and other institutions. Recruiting teacher participation would increase the capacity of educational R&D.

There are signs in some countries that dialogue among the stakeholders is being re-established. Criticism has led to a certain healthy critical re-evaluation on all sides. The repertoire of issues being researched and developed rightly varies by country and by the level of the system being researched. That variation, however, may result from a lack of systematic needs analyses, and from unawareness of the range of knowledge that is or can be made available to policy-makers and practitioners.

Educational R&D operates in several dimensions. It is concerned with problems at the macro or societal, the meso or structural level and the micro or operational levels. It invokes knowledge and techniques from a wide range of disciplines and theoretical perspectives, and uses a wide range of epistemological perspectives. If research commissioners are to make successful links with educational R&D, they must understand these differences and identify the research allies who are most likely to meet their needs.

Tuning the interactive model

In almost all countries analysed in this study, the linear model of research utilisation is being questioned. Research should therefore be valued as much for its illuminative role as for any direct "results" that it might produce. The linear or social engineering model also assumes role differentiations in which the researchers generate knowledge which the practitioners and policy-makers use. The better assumption seems to be that interaction between the different participants will generate knowledge that is relevant, usable and tested under conditions of reality.

Conclusions for action generated by the interactive model are based on three interlinked premises. First, educational policy systems need to be good performers in the complex process of identifying problems, setting a research agenda, and behaving as active recepters and implementers of results. Second, educational researchers should produce results which show reflectiveness on scientific theories, practical insights and policy constraints. These kind of results appeal to people who learn and teach (or bring messages to society). Third, practitioners should join researchers and policy-makers in the quest for usable knowledge. This conclusion points to the importance of networking, and to the role of governments in supporting and sustaining networks.

Bridging the gaps

If the gap between researchers and users is a central problem, well noted in a substantial literature on the subject, the required actions are as follows:

- For successful outcomes, those who commission research must clarify the kinds of results needed and be able to exploit them in formulating and implementing policies.

- There must be adequate research resources upon which policy-makers can call. This requires policy attention to the funding, training and sustaining of a research capacity.
- The research agenda should be formulated with multiple perspectives in view. This entails consultation and negotiation between those commissioning research, prospective researchers, and practitioners and their clients.
- All parties in research should play their own role, and interaction and linkage should not attempt to confuse or homogenise the separate roles. But ultimately, educational research will have to strengthen the knowledge base and the reflective practice of schools and teachers. Once objectives are agreed, it will be for the researchers to specify the methods to be used – but in consultation with their clients, to ensure consensus on ethical issues that might arise and the credibility of the research outcomes.
- Whilst collaborating with client or stakeholder groups, researchers must ensure that their methods are acceptable on scientific criteria so that they will stand up to peer review.
- Research design and execution will include reference to issues of cost, time-scales and ultimate audiences and dissemination.

Employing teachers as researchers

Teachers and administrators have access to experience which can be crystallised into more systematic knowledge. They need, however, training and time to convert such observational and developmental thinking into forms of knowledge which can be communicated, verified and transferred to other domains of both research and practice. Practitioners could work with researchers, or perhaps become part-time researchers, whilst producing work (often referred to as "action research") containing insights different from those generated through other inputs.

Identifying the knowledge needs of the stakeholders

Policy-makers use knowledge in planning what should be provided and in evaluating the effects of their programmes. Decision-makers generally do not need more information, in the sense of layer quantities, but demand synthesised and packaged knowledge. Their needs cover at least the following:

- perspectives on the changing nature of educational populations, their size, their socioeconomic and ethnic make-up, and the state of the economy as it both nourishes the educational system and expects contributions from it;
- insights into the educational wants as presented by the multiple stakeholders which can then be converted into a needs analysis;
- knowledge of patterns of educational organisation as they support or control educational practice;
- evaluation of the impacts of policies;
- the costs and benefits of different policies;

- what works or what does not in education – what kinds of curricular, organisational patterns and differential applications of resources might affect the propensity of educational systems, institutions and practitioners to work more effectively, is an example of a legitimate question to which answers are needed (it is in this area that policy-makers often feel the knowledge base to be most lacking);
- information on the working of the education system in lieu of the information derived from pricing mechanisms; information about changing clients' needs and wants, and the extent to which they perceive that education is meeting them;
- reliable national and international statistics and indicator systems.

Local authorities responsible for education need much the same data as those required by central policy-makers. They need to have a secure grasp of the educational needs of their area and of the impact of policies and practices on their constituencies.

Practitioners often lack the time to reflect on practice in the light of research knowledge. Schools also often lack the freedom to change their way of working. Teachers and other staff thus need knowledge of how they can adapt their teaching and learning practices to meet the developmental and future employment needs of their pupils. Schools could examine what their profile should be, how it relates to the wider community of parents and employers, and how it then formulates and evaluates its curriculum and educational organisation. This will require teachers individually and collectively to be self-interrogating about their practices. This might lead them, in addition to their own "action research", to invite more systematic and disciplined enquiry from outside their own experience.

Clients of educational services are another important stakeholder group. An advisory group in which practitioners and client groups such as parents, employers and students are represented will help set the agenda and apply reality tests to the findings of researchers. They can help legitimate the research and ensure that it has good access and that feet remain on the ground. Interest groups may also seek knowledge upon which to base their arguments for change.

Finally, research workers in educational R&D ought to be concerned with all these different needs of stakeholders, and at the same time be guided by a disinterested search for new knowledge. They need freedom to be critical, constructive, clever, creative and useful. But in educational R&D, as in most research fields, there is an end user whose needs must be considered.

Improving communication in the R&D system

The use of knowledge in policy and practice can be enhanced by communication at different levels, different phases of R&D projects, and the involvement of a variety of people on international, national, regional and local levels. Communication needs to be systematic but also informal and interactive through networking. Establishing a basis of respect and even emphasizing mutual dependency are preconditions for improved communication. Several recommendations might apply to each of the three partners:

- For policy-makers, the measures might include: organising the evaluation and monitoring functions of a modern, information-dependent policy system; creating

a climate for rational knowledge-based policy-making; organising the knowledge "household" in the policy system; and avoiding overload of the research agenda by finding other means of obtaining routine factual data and answers to very specific or mundane questions.

- For practitioners, the steps might involve: creating possibilities for organisations of schools to influence innovation in their sector; giving schools enough autonomy for them to be able to organise their internal processes; investing in ways of disseminating professional knowledge to the teachers; supplying the schools with limited funds to buy the knowledge and development work they deem necessary; investing in the creation of local networks among schools that may stimulate knowledge transfer and the percolating of "good" practice and innovation; educating teachers in the basic principles of epistemology and research methodology, including "action research"; offering incentives to encourage schools to engage in research projects; and ensuring that each school that serves as a subject for research receives appropriate feedback on the results obtained.
- For research workers, appropriate measures may be: stimulating mobility and the transfer of personnel between policy and R&D organisations; encouraging platforms for open discussions among the representatives of the policy, practice and research communities; minimising bureaucratic procedures and red tape, so that little time lapses between the formulation of priorities and the actual start of the study; and paying attention to the training of applied research workers, who need an understanding and experience on top of their traditional research training. Research workers also need to be more involved – if not contractually obliged – to take an active part in the dissemination of research findings to schools and practitioners.

A note about style and approach should be added. In communicating the findings of commissioned work, researchers should keep in mind that elaborate scientific reports are not suitable as a means of communication in many settings of policy and practice. Researchers are also well advised to manage some restraint in the formulation of the policy implications they think a research study has. Policy-making is not their mandate, as doing research is not the mandate of policy-makers. In general, policy makers in a strong position require information elements, and they will tend to formulate their own conclusions based on the available information. This does not mean that researchers cannot act in an advisory role and be consulted at strategic moments in the decision-making process. Attention paid to the usability of educational research should of course not lead to a neglect of the normal requirements of scientific quality control. Research derives its strength from observing the rules of reliability and validity; poor-quality research will be of no help to anyone.

Recommendations for improving international co-operation

Detailed proposals for improving networking, international communication and joint work have been made earlier in this chapter. Here, it might be added that co-operation in

R&D might help neutralise the effects of transferring myths about other systems into current policy discussions.

A strong argument can be made that international and comparative perspectives are to be encouraged. There are many areas of study where research can fruitfully be conducted comparatively between researchers from different countries. Work undertaken in one country can illuminate that conducted elsewhere. Explicitly designed comparative studies in education are a valuable source of knowledge and can have an influence – albeit a limited one – on policy formation, as studies conduted since the early 1960s by the International Association for the Evaluation of Educational Achievement (IEA) have shown. Yet such studies also demonstrate the need for a more negotiated agenda that can balance several interests. Limitations are imposed in a situation where agenda-setting for comparative research is driven almost exclusively by the concerns of involved and committed researchers. More recently, the value-added of political negotiation and international collaboration in the design and operation of educational research activities is demonstrated by the success of the programme on education statistics and indicators pursued by the OECD (the INES project). Concerted efforts of this kind are few, however, and most fruitful co-operation and interchange arises spontaneously from the fact that research in principle has no international boundaries. Many international research associations in educational R&D – the latest being the European Educational Research Association (EERA) – already promote the exchange of knowledge, and individuals communicate and increasingly work with each other.

But it can also be observed that a complex of interests must be met when deciding on research priorities within any one system. This should imply a careful attitude about advancing sweeping recommendations to "co-ordinate" research agendas internationally. Attempts to co-ordinate between systems are usually based on a rather broad understanding of the issues to be researched and can end up in inefficiency and wasted research effort. The costs and benefits of establishing institutional platforms for determining international research priorities and co-ordinating agendas, and the ways to make them work, must therefore be studied very carefully. This clearly does not negate the need for intensifying exchange and dialogue internationally, since issues of research co-ordination by networking, pooling resources, establishing joint centres of excellence, and joint activities in the international storage and dissemination of synthesised research knowledge, are already on the policy agendas of governments.

There is obviously room for international bodies that collate and disseminate information for the use of policy-makers, researchers and practitioners. Such bodies also exploit research findings as a contribution to policy analysis, and in the process of circulating knowledge and ideas help set the agenda for future research. Establishing and helping to enlarge a comparative knowledge base for educational policy-making and practice, then, is among the tasks faced by many international organisations involved in education co-operation.

The dissemination process is, however, seldom a direct one, and many actors and steps are involved. Active dissemination work must span multiple layers, from national and international information centres to schools and teachers. The networks and bibliographic instruments need to be given strong support. The rapid development and imple-

mentation of new information and communication technologies open up new and exciting possibilities in this regard.

In conclusion, it would be possible to strengthen international R&D dimensions in education by removing obstacles that prevent the emergence of international quasi-markets for R&D, for example by:

- intensifying dialogue in international settings and forums so that common problems and possible projects can be identified;
- looking for forms of international collaboration to address common problems, for instance in terms of pooling resources and creating joint centres of excellence, particularly when the subject of the research would be advanced by adopting comparative perspectives;
- establishing international bidding procedures so that the best equipped and qualified researchers, from whatever country, would be appointed and the international dissemination of knowledge, insights and ideas promoted;
- facilitating the development of an international and comparative knowledge base through networking and the use of information highways, staff and student exchanges, shared training events for junior researchers, shared research programmes and projects, and joint dissemination activities.

This takes us back to the Ministerial meeting of November 1990, when the Education Ministers of OECD countries observed that experimentation and innovation in educational R&D should be given strong support. This report has shown that big questions still surround the issue of the proper role of governments in supporting and funding educational R&D. The analysis made here has shown that while there is no single best model for government policy on educational R&D, negotiation among the different stakeholders certainly is a key instrument for addressing perceived shortcomings in terms of coherence, relevance, quality, efficiency and utility.

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Annex 1

Case studies of innovation in educational R&D

The statement of the problem in Chapter 1 indicates that innovative solutions are needed to ensure an adequate balance of fundamental research and applied or decision-oriented research that can contribute new insights to the knowledge base for educational policy and practice. Innovative solutions are needed to bring about change in the following directions:

- from fragmentation to coherence in educational R&D;
- from disciplinary to multi- and interdisciplinary educational R&D;
- from *ad hoc* applied educational R&D to system-integrated educational R&D;
- from local and national to international educational R&D, for example the pooling of resources and the setting of international research agendas;
- from scattered, isolated pieces of research to aggregation and synthesis;
- from useful but often ignored educational R&D to the systematic reporting of educational R&D and its role in decision-making;
- from low-quality to high-quality educational R&D;
- from one-stakeholder research to negotiated multistakeholder research.

Creating innovative and above all effective solutions is difficult. The countries that have been examined as part of this CERI study offer a number of interesting examples of both successes and failures in the effort to address the five key problems that were identified in Chapter 2: fragmentation, irrelevance, low quality, low efficiency and low utility. The purpose of Annex 1 is to present a few case studies of the national infrastructures and problems and prospects of educational R&D. Special attention is given to recent developments and innovations in educational research and development. The case studies describe the situation in the countries which were examined through international seminars: Australia, Austria, Germany, the Netherlands, Portugal, Sweden, Switzerland and the United States.

A.1. Australia

Two national reviews of educational R&D were conducted in Australia in the period 1991-93. One was a general review of the whole educational R&D enterprise (McGaw *et al.*, 1992), the other a more specific review of R&D in vocational education and training (McDonald *et al.*, 1993). The events leading up to these reviews, and their findings and recommendations, are summarised in the case study below.

Structures and institutions

The general review was initiated by the Australian Research Council, an agency of the federal government responsible for recommending funding for research in all disciplines, primarily in higher education institutions. While this review became the third in a series of discipline reviews, commencing after ones had been initiated in physics and earth sciences, its origins lay partly in criticisms from within the educational R&D community about the adequacy of funding for its enterprise. There had been a federal funding agency for educational R&D during the 1970s and, with its abolition, funding levels had dropped. The Australian Research Council had become the sole agency through which competitive research grants could be sought, but a view had developed that the disciplinary structure of its review committees did not adequately take account of a field such as education.

The more particular review of R&D in vocational education and training was initiated by the vocational education and training authorities concerned that there was an inadequate "research and development base to guide the implementation of reforms and the best use of resources" (McDonald *et al.*, 1993, p. *i*).

The general review of educational R&D was initiated by the Australian Research Council on terms that required additional financial support from other agencies as a condition of the Council's support. The final 17 financial sponsors of the review included nine professional associations, two national R&D agencies, four state and territory departments of education, a federal government agency and the Australian Research Council. Participants in a planning meeting convened by the Australian Research Council formed a reference group for the review, which was conducted by a panel appointed at the planning meeting and consisting of the head of a national educational R&D agency, an educational researcher who was a member of an Australian Research Council Review

Panel, a researcher in vocational education and training, and a senior official from a state department of education.

The review of R&D in vocational education and training was commissioned by the Vocational Education, Employment and Training Advisory Committee (VEETAC), a committee established by the national council of Ministers of Vocational Education and Training. To develop a national strategy for R&D in vocational education and training, VEETAC appointed a Research and Development Working Party which commissioned a group of vocational education researchers at the University of Technology, Sydney, to assist in the development of the strategy.

There are several significant differences in the origins and sponsorship of the two reviews which, in the end, appear to have influenced the impact of their recommendations. The general review arose from the educational research community, and although it received some financial support from departments of education and had submissions from all but one of them, it was predominantly sponsored and conducted by the research community. The more specific review of R&D in vocational education and training was established and supported by vocational education and training authorities while engaging the research community in its review process.

Both reviews reported on the status of educational R&D in Australia, one on the overall picture, the other specifically on R&D in vocational education and training. The general review concluded that the educational R&D enterprise in Australia had many strengths and that there were signs of considerable expansion in recent years. Funding for more basic educational research through the competitive programme of the Australian Research council had grown to the point where education was third in funding in the social sciences, after psychology and economics. Further, 22 of the 50 Australian universities had nominated education as one of their areas of research strength. There were, however, continuing issues of serious concern, including a general perception among education administrators and practitioners that research was generally irrelevant to their concerns; feelings among researchers that they lacked support from government agencies and the higher education sector; low levels of funding (compared with that for other fields); and lack of co-ordination and lack of planning for training of new educational researchers.

Resources for research

Growth in the educational R&D enterprise, particularly since the 1960s, had created some of the lack of cohesion. There were 33 professional education associations in Australia that published research-based journals, 23 of them established during the last three decades. Since education is a research field rather than a discipline, it is to some extent inevitable that researchers will communicate and meet around more specific research interests within the field, but the conclusion of the review was that the educational research community in Australia was too fragmented.

As Table A1.1 shows, the latest data available to the review from the Australian Bureau of Statistics' surveys of R&D revealed that the bulk of educational R&D in

Table A1.1. **Expenditure by type of educational R&D, 1988-89**

($ million, March 1992)

	Pure basic research	Strategic research	Applied research	Experimental development	Total
Federal government			0.1	0.5	0.6
State	0.1	0.2	5.6	13.6	19.5
Higher education	5.2	10.0	26.3	7.2	48.7
Private non-profit		0.1	1.0	0.4	1.5
Total	5.3	10.3	33.0	21.7	70.3

Australia could be categorised as either "applied" (45 per cent of expenditure) or "developmental" (30 per cent of expenditure). Only around a quarter could be viewed as either "pure basic" or "strategic", and almost all work in this category was undertaken in higher education institutions.

Almost all financial support for educational research in Australia is provided by government since there is not much investment by business and little philanthropic contribution. The largest amount of aid is from the federal government, with the bulk of that contribution being through its funding of university staff, a proportion of whose time is committed to research. Expenditure figures by source of funds and location of the R&D activities are shown in Table A1.2 for the latest data available to the review. Total expenditure on educational R&D in Australia represented 0.35 per cent of total education expenditure. By comparison, 1.4 per cent of health expenditure was allocated to R&D, and the federal government has since committed itself to increasing that rate to 2 per cent of total health expenditure.

Most of the R&D funded by the state governments and some of that funded by the federal government is specifically commissioned. This spares government authorities the costs of maintaining their own research capacities and can give them access to specialist

Table A1.2. **Location and source of educational R&D expenditure, 1988-89**

($ million, March 1992)

	Federal government	State governments	Business	Private non-profit	Overseas	Total
Federal government	0.6					0.6
State	0.2	19.2	0.1			19.5
Higher education	46.0	1.3	0.2	1.1	0.1	48.7
Private non-profit	0.5	0.5		0.5		1.5
Total	47.3	21.0	0.3	1.6	0.1	70.3

expertise for speedy, flexible responses to changing circumstances. It also offers the benefits of credibility that independent agencies can provide. For the researchers there are the benefits of working on projects that are clearly relevant to the needs of education authorities but there are risks of constraints on the scope of work and rights of publication.

The more specific review of R&D in vocational education and training reported that, whereas 27.9 per cent of all recurrent expenditure on education was for vocational education and training, only 14.6 per cent of educational R&D expenditure was for vocational education and training. This means that R&D expenditure represents only 0.22 per cent of total expenditure in vocational education and training.

Research themes and methods

Analysis of the educational R&D entries in the Australian Education Index for 1980 and 1989 revealed growth in the areas of educational philosophy, policy and development; teaching materials and equipment; and higher education systems and institutions and decline in the fields of educational psychology and sociology. Submissions to the review also nominated trends in educational R&D. In substantive terms, increased emphases were nominated in a range of fields including literacy and language education, mathematics and science education, special education, gender issues, teacher education and policy issues. In methodological terms, increased use of paradigms from philosophy, critical theory, feminism and economics and decreased use of paradigms from psychology were reported. Increased use of qualitative methods and, in the case of quantitative work, increased use of multivariate methods were also reported.

Like the general review of educational R&D, the one concerned specifically with vocational education and training concluded that the current research effort is fragmented. It also concluded that there was little fundamental and general-issues-based research in vocational education and training and no strong critique of vocational education and training policies and programmes.

Priorities for research

Both reviews suggested priorities for future educational R&D in Australia. The general review proposed the following criteria for setting priorities for the national research agenda:

- criteria deriving from the application, use and benefits of research:
  - social and economic needs;
  - equity and social justice;
  - the needs of professional practice;
- criteria deriving from the needs of educational research:
  - to preserve and capitalise on existing research strengths;
  - to contribute to and capitalise on advances in research;
  - to remedy important gaps and weaknesses in research.

Then, in the light of these criteria, the following research priorities were nominated for the concentration of a substantial component of national funding for an initial period of at least three years:

- fundamental research on areas of continuing importance to education and the improvement of professional practice, in particular:
  - the teaching of thinking skills;
  - learning in the preschool and adult years;
  - assessment of student learning;
- research on the organisation and management of educational structures, programmes and personnel, and the interrelationship between education and the wider society, in particular:
  - leadership and management in devolved education systems;
  - education, training and work;
  - teachers' work;
- research directed towards the revision and improvement of specific areas of the curriculum, in particular:
  - mathematics education;
  - science education;
  - language and literacy education.

The specific review of R&D in vocational education and training proposed the following criteria for setting priorities:

- the potential benefits to vocational education and training, particularly focusing on topics for which there is a major research need and the extent to which the research can form a foundation for further research;
- the ability for the research to be used;
- feasibility of the work in terms of:
  - the gap between what is known and what it is possible to find out;
  - the capacity of available personnel to undertake the work.

In the light of these criteria and information collected from a search conference, interviews and submissions, the review proposed that the majority of government funding of R&D be focused on the following priority areas for an initial period of three years:

- economic benefits of vocational education and training at macro- and micro-levels;
- management in the technical and further education systems, particularly the assessment of various approaches to corporate management;
- links between training and productivity, including the interdependence of training, organisational development, business vision and productivity, and the place of language, literacy and mathematics in workplace reform and training;
- community perceptions of vocational education and training and how these perceptions are formed;
- competences of teachers in technical and further education, and the potential role of practitioners as researchers;

- assumptions underlying, and strategies for, implementing competency-based training and assessment;
- approaches to the dissemination and use of research in vocational education and training.

Planned innovations

In addition to recommendations about research priorities, both reviews offered suggestions for the organisation and funding of R&D. Both recommended the development of stronger links between policy-makers, practitioners and researchers to maximise chances of R&D fostering long-term improvements in Australian education. For basic research, both reviews suggested that the major source of funds continue to be the competitive research-grant scheme of the Australian Research Council. The general review considered and rejected the proposition that this Council be asked to establish a separate education panel for the evaluation of research proposals in the field of education. It did recommend, however, that at least one education representative be a member of the humanities and social science panel.

The general review proposed the establishment of an Education and Training Research Board, suggesting it have 12 members, an independent chair, plus three representing each of educational researchers, education providers, practitioners and the wider community. For education providers it was claimed that the benefits would be a stronger influence in setting a national research agenda, more comprehensive and powerful studies through pooling of resources, and attention to a wider range of issues. For researchers, a major benefit claimed would be the opportunity to have a more tangible impact on policy and practice.

To fund the proposed Education and Training Research Board and its R&D programme, the review proposed a small levy on education expenditure. The proposal of a levy was based on R&D schemes in a range of agricultural industries in Australia where the federal government matches industry contributions to a level of 0.5 per cent of the gross value of the agricultural product. For educational R&D, the review proposed that the total funding be increased over a ten-year period from the present 0.35 per cent of expenditure on education to 0.7 per cent, with a quarter of this to be raised by levy and managed by the Education and Training Research Board.

The specific review of R&D in vocational education and training examined a range of structures for co-ordination of general issues-based and client-oriented R&D, including a single national organisation, several independent centres, a single centre with several branches, and a consortium of R&D partnerships.

This review recommended an increase in the funds for R&D in vocational education and training from 0.22 to 0.5 per cent of total expenditure on vocational education and training over three years followed by a gradual increase to 1 per cent. Since the federal government is a major funder of vocational education and training, it was proposed that

this government be the primary source of the increased funds for R&D in vocational education and training.

The general review reported first, but proposed that consideration of its recommendations be delayed until the review of R&D in vocational education and training be completed. The general review's inclusion of training in its proposed research priorities and its recommendation of an Education and Training Research Board, however, were deliberately intended to ensure that a broad view of education and training be taken within the compass of a single national R&D agenda under the auspices of a single new national organisation. Inevitably, given its terms of reference and its sponsorship, the review of R&D for vocational education and training proposed an R&D programme and a structure specific to vocational education and training.

The outcomes of the two reviews are now clear, at least in the short term. One recommendation of the general review was adopted immediately. It was the negative recommendation that a separate education panel not be established within the Australian Research Council. The other recommendations of the general review have had virtually no impact, since the key recommendation of funding for the proposed Education and Training Research Board and its R&D programme through an industry levy was strongly opposed by agencies from whose funds the levy would be drawn. The Australian Vice-Chancellors' Committee, for example, immediately and publicly opposed the idea of any levy for research on education and training being taken from the funds for higher education.

By contrast, the recommendations for an increased R&D programme in vocational education and training have been acted on because more funds have been provided. In this case, there was essentially a single source of funds to be persuaded, not a plethora of governmental and other education providers. Responsibility for overseeing vocational education and training has been given to a new Australian National Training Authority for which the funding comes from the federal government. This Authority established a National Research Advisory Council and allocated $1.2m for 1994, with an expectation of increased allocation in subsequent years.

In December 1993, the National Research Advisory Council agreed on five priorities for its R&D programme. It held a national conference on these priorities in April 1994 and revised them to some extent to the following:

- needs of small business, including:
  - women in small business;
  - managing small business;
  - the extent to which skill demand differs in organisations of different size;
  - effective training for people in small enterprises;
- needs of special groups, focusing on:
  - in the first instance, Aboriginal people and youth;
  - modes of delivery, especially to Aboriginal people in remote and rural communities;
  - skill levels of the lowest school achievers and the contexts in which these might be improved;

- assurance of quality, including:
  - evaluating the appropriateness of training in relation to client needs;
  - developing and monitoring standards for teaching or training and learning;
  - developing and monitoring procedures for measuring such standards;
  - translating quality-assurance experience into the vocational education and training context;
- the economic impact of vocational education and training, including:
  - the economic outcomes of participation in vocational education and training, with particular reference to labour market and income consequences;
  - the economic costs and benefits of major models of initial vocational education and training;
  - the role of vocational education and training in national economic development;
  - the role of vocational education and training in bringing about changes in the workplace;
  - market mechanisms and vocational education and training;
- learning in the workplace, including:
  - differences between the workplace and the classroom;
  - teaching skills in the workplace;
  - workplace assessment.

Conclusion

A general lesson which might be learned from the outcomes of the two educational R&D reviews is that adoption of recommendations which are fundamentally dependent on increased funding is more likely where responsibility for considering them is not spread among a large number of agencies, where sponsorship of the review reflects a belief by key education providers in the potential value of R&D, and where sponsorship of the review is provided by the agency that will be responsible for funding decisions consequent on the adoption of recommendations.

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A.2. Austria

Austria has a long tradition of pedagogical thinking, but up to the 1960s this field of study was mainly influenced by philosophy and the humanities. A reorientation occurred in the mid-1960s, with a shift from historical to empirical research and a strengthening of the connections with psychology and the social sciences. This shift led to several changes in the organisation and conduct of educational research in the country. These developments are reviewed briefly below, with an emphasis on current issues and plans for reform. Three major fields of research are reviewed, namely school education, higher education and vocational education.

Structures and institutions

In terms of governance, the division of responsibilities between the federal government and the *Länder* presents a complex picture. Simplifying this picture, it can be said that compulsory education is the responsibility of the *Länder*, whereas post-compulsory education (including higher education) is a federal responsibility. The federal government has the power to pass fundamental laws applying to the whole education system.

There is one national institute for research in school education, the *Zentrum für Schulversuche und Schulentwicklung* (ZSE). It was founded in 1971 with the task of evaluating the reform models for comprehensive schools (*Schulversuche*). This reform failed for political reasons and subsequently – during the 1980s – the ZSE shifted its focus away from questions of school organisation to school and curriculum development.

Six out of twelve Austrian universities have institutes for educational research. The University of Klagenfurt is of particular interest because it was established, in 1970, to deal exclusively with issues in educational research. It was hoped that this university might become a centre of excellence in educational R&D and also a consulting agency for the government. However, as a consequence of political decisions, and with the decrease of interest in educational issues during the 1970s and early 1980s, the university shifted its attention to other fields of study, although it still has the largest number of personnel devoted to educational research of all universities in the country.

The main impetus to the emergence of educational research as an empirical discipline with close connections to the social sciences came from the research policy adopted in the late 1960s. This R&D policy was connected closely to questions for education

reform – for example, how to cope with the expansion of post-compulsory education. On the one hand the growth of student numbers gave rise to higher levels of administrative complexity and posed new challenges to the administration of schools and universities. On the other hand, politicians and administrators made deliberate efforts to reshape the curriculum, to increase access to students from disadvantaged backgrounds, and to democratise educational institutions.

Resources for research

According to estimates of OSTAT, the resources for educational R&D were Sch 143.2 million in 1989, three-fourths of which were spent by university institutions. These resources were almost entirely raised and spent by the state, more than 90 per cent from central budgets. Broken down by different functions of R&D, more than half of this money was used for applied research (57 per cent), approximately 32 per cent for basic research, and only 11 per cent for development.

Twenty-nine institutions which performed activities in the field of educational R&D are covered in these estimates, 18 of which are established within the university sector, two in the public sector, and nine in the private non-profit sector. Because there is no information available about the funding of the latter institutions, the estimates of overall resources are certainly not complete. On average, an institution within the university sector spent Sch 6.2 million in 1989, and the average cost of an institution in the public sector was considerably higher (Sch 16.2 million).

Half of the resources are spent on personnel: 422 persons perform 160.2 full-time equivalents (FTEs) in educational R&D, of whom 293 persons (113.8 FTEs) are researchers. On average, every nine research FTEs can rely on one FTE technical assistant, and every 3.3 research FTEs have assistance from one FTE of other support personnel. An average institution employs 10 researchers, whose working time, however, is considerably less than full-time (3.9 FTEs). Institutions in the university sector are considerably larger than other institutions, but the ratio between researchers and support personnel is better outside the universities.

Specific investigations in the field of R&D on vocational education show that the amount spent on educational research in Austria may be considerably underestimated by the above figures. A rough estimate of resources for R&D in the field of vocational education would be between Sch 50 to 100 million. Because this part of educational research is mostly performed in institutions outside the universities, the overall financial resources may be up to one-third higher than the Sch 143 million estimate. Specific investigations also show that the number of institutions – and consequently the number of research FTEs – involved in educational research is certainly higher than these figures indicate.

Research themes and methods

The information base for an overall account of research fields and methods is consequently rather weak. According to data on R&D funding from OSTAT, about half of the money is spent on applied research, one-third on basic research, and only 13 per cent on development. It must be mentioned, however, that this picture is likely to be skewed.

Three major fields of research are institutionalised in very different forms: school education, higher education and vocational education. The discipline of "educational science" (*Pädagogik* or *Erziehungswissenschaft*), which obviously makes up the core of research, concentrates very much on school education. In this field, another group of researchers from this discipline is also active in the ZSE state agency. Research in the fields of tertiary education and vocational education is dominated to a higher extent by the different branches of the social sciences, with a strong predilection for survey research and opinion polls, especially in the latter field.

Priorities for research

In the 1960s there was broad agreement that Austria needed to increase the educational qualifications of its workforce. Research at that time focused on the issues of managing access to post-compulsory education and forecasting manpower requirements. The first substantial contributions to these issues were made not by university-based researchers but by Ministry staff (for example, the first Austrian report on education presented to the OECD in 1968). Contributions came also from the teacher training institutes, which have a distinct tradition of empirical research (*pädagogische Tatsachenforschung*).

Research on school education

The 1970s were dominated by the very controversial issues of comprehensive schooling. The ZSE was explicitly founded for the purpose of evaluating whether students from comprehensive schools perform as well as students from the traditional system. At that time the situation at the universities had already changed and there was significant potential for empirical research at most institutes for research in education. Several university researchers contributed to the evaluation of the model schools (*Schulversuche*), but there was also much controversy and criticism concerning those reform models, coming not least from within the universities.

In the late 1970s and the 1980s the reform-oriented climate of the previous decade gave way to a more pessimistic mood. The reform of the secondary school envisaged in the 1960s failed. Policy-makers ignored the research on comprehensive schooling, and the reform models were discarded. The practice of selecting children and allocating them to different tracks at the age of ten has been perpetuated and only slightly modified. This was accompanied by a shift in the research agenda. Instead of trying to achieve equality

of opportunity, many researchers worked on studies trying to explain why it is impossible to achieve this. Other researchers directed their attention away from the study of disadvantaged towards the most gifted students.

A new reform spirit in education has emerged in the 1990s. The new slogan in both research and policy-making is school autonomy. Instead of seeking comprehensive solutions the focus is on local, that is, school-level initiatives. Recent research issues include multiculturalism and the integration of disabled students into the "mainstream" educational community.

Research on higher education

Starting in the 1960s, the federal government launched initiatives to make the higher education system more responsive to societal demands. For this reason the authorities began to make opportunities for contractual research available to university and extra-university researchers. Until today, such contracts have been the most important source of funds for research into higher education in Austria, with as many as 800 projects being commissioned by the Federal Ministry of Science and Research.

The projects have addressed a variety of questions and have employed different disciplinary orientations and research methods. Four main groups can be distinguished:

- Some projects have merely aimed to reduce the administrative burden associated with higher education.
- Some have aimed at exploring specific public policy options – for example, the investigation of the legal implications for education of Austria's entry into the European Union.
- Still others have constituted more broadly based, strategic research.
- Finally, some projects have been undertaken in which the administration has simply subsidised more general education research.

Issues covered in these four areas include:

- drop-out rates and the causes of the typically long duration of higher education study in Austria;
- access to the university system;
- the "democratising" of the system both internally and externally;
- curricular reform;
- student support issues;
- the graduate labour market;
- more recently, questions of internal institutional management which have come to the fore.

Most university-based research in this area has been researcher-initiated. Three institutes in particular have focused on higher education research but, in general, universities have not recognised a strategic interest in undertaking institutional research. In the absence of university-based facilities for R&D focused on the higher education sector, a national-level private association (*Österreichische Gesellschaft für Hochschuldidaktik*)

has been set up by individuals with a special interest in this area. This association caters to staff development needs and publishes the only Austrian journal of higher education research.

Research on vocational education

Research into vocational education is a distinct field in Austrian educational R&D. Its distinctiveness results not only from the specific questions that are addressed, but also from a special institutional framework constituted by both researchers and "customers". Research in vocational education is connected to both the apprenticeship system and the system of monitoring labour market development. The term "development" refers to routine activities of compiling and updating information about occupational categories on the one hand, and more innovative activities using multimedia systems on the other hand. An important issue is the development of a system for the monitoring of labour markets which, however, has until now not been tightly connected with issues in education and training.

R&D into vocational education became a more important topic during the early and mid-1970s; its intensity increased somewhat until the mid-1980s and has remained stable since then. R&D in this area is dominated by applied or contractual research. Since the early 1970s, a structure of institutions has emerged in this area which is mainly market-driven, the demand being expressed by the federal authorities and the social partners, and supply being served by private sector initiatives which, to an extent, are publicly subsidised. At the supply side, three groups of institutions can be identified. First, there are four institutions on which the major share of both work and funds are concentrated. Second, there are about ten research units which carry out at least more than one project during a two-year period. And third, some 40 to 50 institutions and individual researchers are registered as performers of single projects.

Different sources give different accounts of the most important research themes. The following list offers a broad overview:

- monitoring of labour market developments;
- apprenticeship training;
- information about occupations;
- further education and training;
- international issues;
- efficiency and reform of education and training;
- vocational issues in higher education;
- target groups for labour market intervention;
- regional aspects.

Sample survey methods are used frequently, although the reports on sampling design are often unsatisfactory. R&D in this field is mainly a routine matter, with only few projects applying sophisticated research methods.

Output of R&D into vocational education may be estimated at about 100 research projects commissioned annually. Since 1990, about 80 publications from 20 researchers

in the field are included in the Social Science Citation Index (SSCI), which is the most important data bank in the social sciences. This amounts to about 25 references a year, or about one or two references per researcher and year.

Problems and prospects

Public policy for educational research still reflects the situation of polarisation which, in other spheres of political life, has largely disappeared. As a result, the notion of a purely professional, expert viewpoint on educational matters is not considered tenable. Statements by education experts tend to be attributed *a priori* to a particular political position and consequently devalued.

Educational R&D has remained somewhat provincial, in that it is not well informed by international experience. Comparative research in education is both poorly developed and undervalued in Austria.

There is a situation of extremely imperfect competition among higher education researchers. Because there are no proper arrangements for the management of contractual and third-party funding, researchers tender for research contracts from positions of important financial advantage or disadvantage.

There is a considerable degree of mutual misunderstanding between the government sector which commissions research and the researchers who carry it out. On the one hand the government sector often fails to appreciate the depth of expertise and, particularly, the continuity needed for undertaking appropriate research. On the other hand, researchers sometimes neglect the practical exigencies associated with the imperative of government to make policy decisions.

A major problem in R&D on vocational education and training relates to the organisational framework. There is a proposal to establish a federal institute for R&D in this field. This proposal, however, is not supported by employer organisations. A compromise was suggested, according to which institutions and researchers would be tied into a network, to be funded with federal money. An alternative proposal seeks to establish a research council, headed by a distinguished researcher, which would commission research projects on a peer review basis.

Further implications for policy

Research on school education

In the past 20 years, educational R&D in the field of school education has developed satisfactorily. There are, however, some problems of co-operation and communication among the different researchers and research units on the one hand, and in the links between research and the political and administrative actors. In recent years, the federal authorities have taken significant steps in order to intensify the dialogue with researchers

and research units. Although the main emphasis has been on school autonomy, there is little doubt that an overall approach to research planning, and some agreement about research priorities at the federal level, is still an urgent necessity. For that reason, the Ministry has organised a series of conferences and seminars which also foster collaboration within the research community. The Ministry should continue with this work, putting special emphasis on two issues:

- The significant lack of R&D in the fields of management and administration of schools and in the economics of education. This is a serious problem at a time of major structural reforms which have consequences both for the administration and the funding of schools.
- The scant attention that is given to equality and equity issues on the policy level as well as in educational R&D. This is partly due to a belief that expansion in higher secondary education and universities has already gone too far. Even the data base for research on this issue is very poor. Developing a proper data base could be the starting point for significant work on indicators of various aspects of inequality of educational opportunity.

Another problem is the status of the ZSE. The tight integration of this institution into the authority structure of the Ministry poses a barrier to fully using its potential. The federal authorities are increasingly aware of the problems which arise from this construction. There is a deliberate effort to increase the institutional autonomy of the ZSE. Some difficulties need to be overcome, however – for example, tensions with the interests of ZSE staff. In any case it is urgent for the ZSE to strengthen its links with the universities.

Research on higher education

A problem in research in higher education is the lack of continuity. The government has spent a considerable amount of money for contractual research but this has not sufficiently guaranteed the development of a critical mass of researchers who have specialised in this field. As a result, most Austrian research is not on a par with the standards achieved internationally.

Various options involving at least some degree of institutionalisation should therefore be considered. An institute for research in higher education should meet two criteria:

- It should be policy-oriented and should co-operate closely with the political and administrative actors in the field. Without this precondition, an institute would hardly get financial support. One way to guarantee an orientation towards practical and applied research is to fund the institute partly on a contractual basis.
- At the same time, the institute should have sufficient possibilities for basic research in order to allow it to develop a sound theoretical basis for research in higher education. The institute therefore needs a certain amount of unconditional funds which give freedom from contractual research and allow long-term strategies for theoretical work to evolve.

There are at least two large reform projects in Austrian higher education which would be suitable as a starting point for such an institute: the implementation of the new organisational act for universities and the implementation of the *Fachhochschule* reform. The implementation of both reform policies needs expertise which is not sufficiently available at present.

Research on vocational education

Further implications for policy in the field of vocational education should first and foremost take into account two major problems: the strong links between the dominating research institutions representing the organised interests of employers and employees, and the lack of theory and basic research in this field.

The existing structure of a market of diversified institutions, which is at present dominated by some highly interest-bound institutions, should be strengthened to ensure the following imperatives:

- the available resources as well as the priorities for research which are set by the commissioners should become more transparent and foreseeable for the researchers;
- the quality standards of the scientific community should be applied more strongly to the process of commissioning research in this field;
- the links of the market-led institutions to the academic research system should be intensified, giving a more theoretical orientation and strengthening basic research.

Because of the multitude of actors in this system who partly have conflicting interests, it will be difficult to realise these objectives. The development of an "R&D plan" in the field of vocational education, in which the different actors would be involved, could perhaps lead to a more co-ordinated and efficient structure. The plan could, as a starting point:

- develop a new and improved structure of research priorities;
- take the new sector of *Fachhochschulen* as an institutional focus;
- strengthen co-operation between the different branches of educational research;
- strengthen international co-operation.

A.3. Germany

In Germany the development of educational research can be attributed mainly to developments in non-academic areas during the sixties. For the expansion and reform of the educational system through international and societal efforts towards modernisation, systematic information was needed on the development of the educational system and processes, as well as on their causal influences on society. At German universities, pedagogy was predominantly oriented towards the humanities and philosophy. At that time, educational science was only just beginning to adopt the approaches used by the social sciences. Educational R&D became permanently established only through the foundation of non-university institutions for educational research. Since then, educational R&D has become more differentiated institutionally and functionally in the competencies and changing needs of response to educational policies and practice. Educational science departments at universities have also contributed to the establishment of specialisation by creating differentiated subject areas.

Structures and institutions

The federal government and the *Länder* (federal states) have varying roles in deciding about educational policy and science policy.

With the exception of certain special ministerial responsibilities, the Federal Ministry of Education, Science, Research and Technology exercises the competence of the federal government in matters of policy relating to education and science. It looks after the following areas in particular: the promotion of education, non-school vocational education, legislation and planning in higher education, and educational planning in co-operation with the states. The Federal Ministry of Education, Science, Research and Technology makes use of educational research in fulfilling its departmental responsibilities. In addition, it draws on the research capacities of a number of associate research institutions. The jurisdiction of the Federal Ministry also covers the Federal Institute of Vocational Education in Berlin and Bonn.

At the level of the federal states, responsibility for school policies lies exclusively with the Ministries of Education and Cultural Affairs. The responsibility for science policy is shared with the federal government. The states support educational research at universities via the basic financial provision for universities. In addition, the states

finance associate or independent institutions engaged in development activities and support services.

The institutions engaged in educational research in Germany have developed differences that correspond to the varying levels of legislative and administrative competence of the federal government and the states (*Länder*) in science policy and educational policy. The need for knowledge of trends and developments in education, on the one hand, and the need for insights useful for policy-making and practice on the other hand, gave rise to three different types of institution: *i)* university-based institutions which are active in research and teaching, in certain cases primarily in research; *ii)* institutions for scientific or basic educational research not located at universities; and *iii)* institutions for applied educational services and development that are either affiliated with associations or subordinate to the federal or state administrations.

In the early 1960s, educational research in universities was underdeveloped. There was frequently only one professorship, covering philosophy and pedagogy. In the early 1990s, educational research was, except at some specialised universities, represented in all universities, at 66 universities in Western Germany and 12 in Eastern Germany.

Research institutions of supraregional importance are located outside the university sector. They are financed from regular budgets and pursue scientific research of interest to the whole country. Independent service institutions also belong to this category of institution. The utility-oriented institutions associated with the federal or state administrations undertake studies aimed at guiding educational policy and practice. In this manner, like the service institutions themselves, they have development rather than research functions.

Prior to 1963 there were only nine institutions of educational research in existence outside the universities. Non-university scientific institutions were created during the latter half of the 1960s, whereas the utility-oriented institutions of the federal government and the states expanded during the 1970s. Since 1986 there are now 28 institutions outside universities on the territory of the former Federal Republic; three of these institutions operate branches in the Eastern states. In addition, two East German federal state institutions also carry out assignments in educational research.

Resources for research

According to an inquiry carried out by the Max-Planck Institute for Human Development and Education in 1988, the material provisions for educational research at the universities were mostly satisfactory, although university-based researchers reported great difficulties in obtaining the funds needed for carrying out survey research. The provision of personnel and equipment at institutions for educational research outside the universities is relatively favourable.

The majority of educational researchers in Germany are based at universities. In 1987, the universities employed 2 120 full-time scientific staff, which made education a major subject compared with related fields in the humanities and social sciences.

Compared with the number of professors (1 012), however, the number of junior academic staff in education is decidedly small. The ratio of professors to junior staff was about 1:1 in 1987. In the humanities and social sciences, the corresponding ratio lays between 1:2 and 1:3. The process of supplying staff to East German universities is at the present time still continuing. The number of educational research staff at East German universities is estimated at about 700.

According to a survey carried out in 1990 by the German Institute for International Educational Research, staff working in research and development at educational research institutions outside the universities in the year 1990 numbered altogether 937 permanent full-time positions for scientific personnel. Since only a few external branches of West German educational research institutions have been established in the new federal states, the personnel resources for research and development in educational research outside universities in Germany as a whole after unification is hardly likely to have exceeded 1 000 full-time positions for the year 1994.

The personnel resources in educational research outside universities can be allocated to research to a greater extent than can scientific staff employed by the universities since their research capacities are restricted by, above all, their teaching responsibilities. On the basis of the time budget data provided by the professors themselves, only about a quarter of their working time was spent on educational research. Similar research potential can be assumed for junior academic staff. The involvement in R&D of the service institutions and of those subordinate to the administration or affiliated with associations is estimated at about 20 per cent of total capacity. This corresponds to between 450 and 500 full-time positions. The ratio of R&D capacity in terms of full-time positions between the university and non-university sectors of educational research is about 1:1.

Research themes and methods

Research conducted in universities is mostly concerned with the general school system. Among the interinstitutional fields within educational science, social education, educational sociology and the economics of education are represented with about 10 per cent each, and diagnostics and counselling with about 18 per cent of the projects. Under five per cent of projects have dealt with the historiography of education, comparative education and educational technology.

There are differences in the research orientations of the universities and the non-university institutions. The scholars based at universities concentrate disproportionately on questions of theory and history. Projects dealing with the structural aspects of education are dealt with mostly outside the universities. Projects dealing with vocational education and adult education are also rarely covered at the universities. In research into vocational education, which plays a minor role at the universities, the state institutions predominate.

Information about the methods used in educational research is available from the Social Sciences Research Information System. Two-thirds of the registered projects may be defined as descriptive or qualitative studies of varying kinds. The remaining, mostly

empirical studies, typically employ simple surveys involving small samples. Cross-sectional studies, which allow inferences to be made to a defined population, along with longitudinal studies, play a subordinate role, with under ten per cent of the projects. Secondary and meta analyses, also with about ten per cent of the projects, have at least established themselves. Experimental research, case studies and studies employing causal-analytical procedures are of only secondary importance, making up less than ten per cent of the total. Among the procedures used to collect data, questionnaire methods predominate, with about 70 per cent of the total. Compared with the 1970s and early 1980s, observational studies and tests are little used now. The lack of longitudinal studies is a weak point.

Priorities for research

The university professors are in principle free to decide on the objectives of their research. The staff at institutions for scientific and basic educational research not located at universities are also independent in planning their research. Their work, like that of university professors, is subject to evaluation that is internal to each specialist field. Evaluation is carried out by the self-governing organisations of science such as the German Research Foundation, the Scientific Council and the scientific advisory boards of the Max-Planck institutes. The research priorities of the institutions associated with the federal and state administrations are established in light of the specialist competence of the respective ministries and the requirements of educational policy and practice.

The federal and state governments thus only determine the objectives of that part of educational research that is conducted by the institutions under their control. The governments decide on resource allocation and establish priorities for the non-university organisations for educational R&D. The Federal Ministry of Education, Science, Research and Technology sets out its current objectives in a performance plan that lists the following items:

- new federal states;
- international co-operation;
- equivalence of general and vocational education;
- cultural education;
- skill formation and staff development policies;
- encouragement of the specially gifted;
- environmental education;
- health education;
- violence and extremism;
- distance education and correspondence courses.

There is also an educational pilot-study programme, designed to yield insights for decision-making about the further development of education. The fields to be supported include at present vocational education; higher education; new information and communications technology in education; incorporation of questions of the environment in

education; education in the arts and culture; girls and women in education; and differentiated support for special groups.

Problems and prospects

Educational R&D in Germany is segmented as a consequence of the functional division of labour among the various institutions for educational research both within and without the universities. In co-ordinating the planning of R&D, account must be taken of the institutional and legal conditions relevant to educational research. At universities and at educational research institutions outside the universities, the self-governing organisations of science are responsible for directing and evaluating educational research. The planning of R&D at the service-oriented institutions is determined by practical and policy concerns. Nevertheless, it ought to be possible to improve the co-ordination of the supportive measures taken by the federal government, federal states and the self-governing organisations of science. Improved co-ordination might be helpful in stimulating the effort to better synthesis and integrate the various sources of knowledge about education, which will also make it possible to identify the gaps in the knowledge base, taking into account not only scientific concerns but also issues connected with policy-making and educational practice.

Because of the segmented nature of the field and the inadequate co-ordination of research work carried out at universities, projects aimed at improving education tend to be minor studies initiated by individual researchers. This raises a number of questions about quality, efficiency and the effectiveness of educational R&D in contributing to the knowledge base for improved practice. For this reason, attention must be paid to the process of establishing priorities at universities and increasing co-operation between the various institutions of educational research. However, problem identification and the setting of priorities for research should be done within the framework of science and with reference to the needs and prospects of the various specialist fields.

Further implications for policy

The individual subdisciplines of educational research differ considerably with regard to the state of their research and their priorities. Hence they require subject-specific further development concerning content and methodology. The institutional and subject-specific differentiation of educational research has, however, also led to a fragmentation of research perspectives and to the neglect of research on superordinate educational questions that can only be resolved by the integration of information available in the individual fields of knowledge. Aspects of the performance and quality of the educational system can serve as the basis for the integration and synthesis of research findings in the various subject areas. Improvements could imply the following measures:

- establishing a permanent interstate special information and documentation system for education as an infrastructure for educational research;

- promoting the setting of subject research priorities at universities;
- improving the collaboration between universities and non-university institutions for educational research: in research projects, utilising existing dissemination systems and training new generations of academics;
- making regular assessments of the state of research and of the research perspectives in educational research, as well as the integration of research findings for utilisation in educational policy, giving practice and research;
- ensuring the further development and expansion of existing dissemination systems and giving increased support for cross-sectional and longitudinal studies in the area of education as a database for monitoring the educational system.

A.4. The Netherlands

In 1995, Dutch educational research finds itself in a transition phase. The law regulating the functioning of the support structure for education will terminate, and the cabinet is examining new ways of ensuring that schools receive adequate support by means of research, development and advice. Final decisions about the new support infrastructure still have to be taken by the Minister and Parliament. The Dutch case study will therefore describe the structure and functioning of the currently existing R&D system and the policies that influence it.

Structures and institutions

The Dutch educational R&D system is highly institutionalised and differently organised in sectors and functions. First, a distinction is made between R&D for the primary and secondary school sector versus R&D for the other sectors such as tertiary education, adult education and aspects of technical and continuing vocational training. The second distinction is between the research function and the development function.

R&D for the school sector has its legal basis in the Act on the Education Support Structure (WOV). Among the educational support institutions are about 65 school counselling services (SBD) operating for the primary schools, three educational advisory centres (LPC) operating in the sector of secondary education, a national institute for development of curricula (SLO), a national institute for educational measurement and testing (CITO), and a national institute for the commissioning of educational research (SVO). In vocational education and adult education, two educational support institutions undertake R&D activities (SVE and CIBB).

The "D" of R&D, which refers to scientific or planned development, can be found in the institutes, CITO and SLO, and for a smaller part in some activities of the LPCs and SBDs as well as in some university departments of education. The research function is served by a larger number of institutions. Among these can be mentioned:

- *SVO*, which contracts for school research;
- *universities*, which receive, as part of their regular budget, funds for carrying out research (40 per cent of the time of university staff); most research activities take place in university departments for educational science, and a lesser part in the departments of psychology, sociology and pedagogy with specialisations in the

field of education. Other educational R&D is connected to university departments for mathematics, science or language, and some universities have their own research centres for university teaching;
- the *Ministry of Education, Culture and Science*, which directly commissions policy research in higher and adult education and for certain aspects of educational policy, for instance the condition of teaching personnel, strategic policy, international policy, financial policy and financial support for students;
- *other research commissioners*, which include ministries, local authorities, employer organisations and intermediary educational organisations.

Besides the regular research taking place in university departments, most of the commissioned research is performed by institutions that may either be connected with the universities or which operate independently. Most of the contracts issued by the SVO are tendered to only five research institutions. The Ministry of Education, Culture and Science maintains stable relationships with these and other specialised institutions, for example those devoted to higher education policy or to the relationship between education and the labour market.

Resources for research

Table A4.1 shows estimates of the total public budget for educational R&D expenditure in 1993. In that year, the budget amounted to Gld 104 million. (*Note:* Gld 1 million is approximately equivalent to the cost of ten annual salaries for mid-level research personnel.) The money spent on educational R&D was equivalent to about 0.3 per cent of the yearly national budget for education.

Research themes and methods

An analysis of all educational research projects undertaken in the Netherlands during 1992 and 1993 revealed the following division by main categories (in per cent):

By field of education (some projects are counted twice)

• primary and special education	32
• secondary general education	31
• secondary vocational and adult education	21
• higher education	20
• other (not connected to field)	13

By type of research

• fundamental research	28
• diagnostic work	36
• development-oriented work	15
• evaluation and assessment	24

Table A4.1. **Public educational R&D expenditure, by type of outlay, 1994**

(Gld millions)

	Budget
Universities (regular budgets)	
Departments of science, of education, etc.	15
Research on teaching subjects	5
University-based teacher training	4
Research centres and open university	6
Subtotal	30
Main R&D contractors	
SVO	20
Ministry of Education, Culture and Science	18
Subtotal	38
Other R&D contractors	
Other ministries	3
Local authorities	2
Intermediary educational organisations	2
Industry, organisations of social partners	
Subtotal	9
Institutions for scientific development	
CITO and SLO	20
CIBB and SVE	6
SBDs and LPCs	unknown
Subtotal	26
Total educational R&D expenditure	103

By orientation of research

- science-oriented 16
- policy-oriented 43
- practice-oriented 44

By method of enquiry and work

- (quasi-) experimental methods 10
- survey methods 46
- qualitative methods 35
- simulation, modelling tools 11
- other methods 24

Of the R&D projects focused on specific subjects the majority dealt with languages and mathematics and science. The most frequently studied social problems are social inequality and the relationship between education and the labour market.

Research of a more fundamental nature that is undertaken in the university departments for educational science is organised under an umbrella institution, the ICO, which also functions as a national graduate school. The research projects affiliated with the ICO can be represented in the following percentages:

- Research on teaching, learning and instruction 42
- Design/development-oriented research 30
- Evaluation-oriented research 22
- Psychometric research 6

The Ministry of Education and the SVO are implementing a general approach to the question of research methodology. For each educational sector the core of the research programme is constituted by a cohort study where pupils are followed from one to the next educational sector or into their labour market career. Besides information about the pupils' social background, cognitive abilities and learning progress, information is also gathered about the organisation and content of the education to which they are exposed. Each three or four years a new cohort study is begun so that it becomes feasible to evaluate the effects of nationwide policies such as the introduction of a common core curriculum in the first two grades of lower secondary education or the educational priority policy for minority groups.

The government's policy is to give the autonomous and other schools scope for innovation and development by operating more at a distance than before. Therefore, policy analysis and research are now more concerned with the policy instruments and the outcomes of education, and less with the processes of schooling.

Priorities for research

Over time one can discern certain trends and shifts in the priorities given to research and development, which follow broad changes in educational policy. During the 1960s the government did not formulate explicit research priorities but subsidised initiatives launched by the university world. This resulted in the foundation of CITO for educational assessment and testing and of the SVO for the financing of educational research.

During the 1970s the idea of a constructive education policy was gradually taking shape. The government created large blueprints for innovation and reform designed to solve social and educational problems. Big innovation programmes were launched for primary education, comprehensive schooling in secondary education, open schools for adults, and projects for experiential and participatory learning. However, only the first innovation, the one concerning the primary school, succeeded on a national level. All these programmes were combined with elaborate research programmes, often depending on action research as a means of solving problems. The available funds were channelled to large institutions for educational research that were connected to universities. As a consequence, the role of the SVO changed from that of a subsidiser of research into that of a research policy agency. The concept of research programming was developed at that time, and the SLO was founded to improve the development of curricula.

Cost saving was the dominant theme during the 1980s. This was triggered by both a situation of economic austerity and the demographic effects on participation in primary and secondary education. The SVO budget for research was diminished. New priorities for policy – and hence for research budgets – became vocational and adult education, higher education and the conditions of teaching staff. The introduction of a new system of conditionally financing the research undertaken by universities led to the institutionalisation of university departments for educational science as well as to a general increase in the level of scientific production in education.

In the early 1990s, policy-makers realised that research did not offer ready-made solutions for their problems or even clear choices between alternatives, but that educational research was a cornerstone of the necessary knowledge base for decision-making. Accordingly, the focus of research programming shifted to educational outcomes (effective schools) and quality measurement (*e.g.* PPON is a Dutch version of a National Assesment of Educational Progress) and to the instruments and tools of government: systems of financing; influencing student choices and educational careers; organisation of schooling (mergers); and careers of teaching staff. As a result, specialisations such as economics of education, educational finance and administrative science partly replaced the former emphasis on more traditional aspects of educational science such as didactics.

Parliament now especially insists that newly implemented educational policies need to be systematically and carefully evaluated. New also are the "quick surveys" on the opinions of school directors and teachers towards new policy proposals. A representative panel of schools has been created so that the government can obtain information of a descriptive kind both rapidly and easily, thus making cost savings possible. Increased importance is assigned to international comparative studies such as those undertaken by the OECD and the European Union. However, there is growing scepticism about the validity and usefulness of international tests of student achievement, for instance for the renewed Dutch curricula on mathematics and science education.

Problems and policies

Although the SVO budget forms only a minor part of all the efforts devoted to educational research, discussions and policies in the educational research system are concentrated in the SVO. The institutes carrying out most of the *scientific development* (SLO and CITO) have survived budget savings, and no significant changes in government policy are expected.

The *quality* of educational research conducted at universities will be reviewed in 1995. Problems have already been identified by a visiting committee concerning research and teacher training at universities.

Programmes for *policy research* run under the auspices of the Ministry, especially in the areas of higher education and conditions for teachers, are generally considered satisfactory for the actors involved.

An analysis of problems and policies concerning the SVO is presented in an historical sequence below.

With the establishment of the SVO, a period of growth began. There was no lack of resources but an abundance of research activities and results, which led to questions of co-ordination within the research system and between research, development and application. SVO presented *research programming* as a means for co-ordination. In practice this system resulted, in the late 1970s, in endless meetings where the involved actors discussed plans for research while safeguarding their interests. In that period the Ministry had over 200 regular advisory committees.

Programming in itself was a rational enterprise with the following approach:

- inventory of research needs;
- problem survey: analysis of policies and problems, available knowledge;
- feasibility of research proposals, design of a programme;
- establishment of the research programme;
- contracting out of the research projects;
- execution, monitoring and assessment of research;
- dissemination.

Researchers complained that up to half of their time was taken up in preparing proposals and attending meetings. Ministry officials and staff of the organisations representing the educational field complained that they did not recognise their original wishes in the end products.

Partly in reaction to these complaints and confirmed in the 1986 Act on the support structure, the research budget (minus the cost of the SVO organisation) was divided into three parts: *i)* 40 per cent for priorities set by the Ministry; *ii)* 40 per cent for priorities set by the national school councils; and *iii)* 20 per cent for priorities set by the scientists (the activities of other institutes in the support structure have a similar priority-setting device).

With this system, the SVO complains about the unclear formulation of priorities, whereas the Ministry remains dissatisfied with the way the SVO translates its priorities in such a form that the results are not recognisable.

The SVO board decides on all projects. All proposals and research reports must pass a quality-judgement procedure.

Owing to rules in the Act, priorities have to be set one year before the contracting procedure starts, which means that the waiting time for results is often three years or more. A few years ago, a shorter procedure became possible for smaller projects.

In general, the discussion on the procedure and position of the SVO comes from two viewpoints. Advocates claim the necessity of an independent organisation between policy and science; opponents complain about bureaucracy, long procedures and lack of influence.

These problems concern the recognisable users of results. Whereas the Ministry has the capacity, means and personnel to analyse the supply of information and to select and translate what is useful, schools have not. A constant problem is the translation of research insights into the classroom. Schools and teachers have no direct access to the setting of priorities.

Following the Act on educational support at the national level, activity programmes of research, development and application (advice, counselling) have to be co-ordinated. This system at the macro level does not work at the micro level, since whenever applications are realised they are the result of incidental networks of individuals.

When compared internationally, the Netherlands has an elaborated support structure, but its weak points remain the coherence between research, development and application, which is enforced by the gap between teacher training (especially for primary schools) and the educational R&D system. Some measures are more or less successful. Results are distributed in a readable form to schools (through the journal *Didactief*. Attractive to schools (they even pay for it) is the participation in nationwide evaluations, for instance of the educational priority policy, where schools receive feedback on the performance of their pupils contrasted with the mean of a comparable group of schools. In the already mentioned panel of schools, they also receive information on their relative position in matters of school organisation. Since the merger of secondary schools, and the introduction of a so-called school profile budget, several of these schools use funds for systematic quality control and local market surveys.

Last but not least, the position of the researchers. Although the educational research institutes complain about the bureaucracy of SVO, their position has been safeguarded for some decades in a semi-closed market. Since universities expect new cuts on their regular budgets and the position of the SVO is debated, this is a threat for the continuity of professional educational contract research.

Recent developments

A few years ago, the former government asked the advice of the Scientific Council for Governmental Policy (WRR) on the future of the educational support structure. The advice given proposed the introduction of a market mechanism: schools could buy their support services.

The reaction of the new government to that advice was recently published by the Secretary of State for Education and includes the following elements:

- The policy and funds for school counselling services (SBD) will be decentralised to the municipalities (these services mainly regard primary schools).
- Secondary schools receive funds to buy their educational support services, including development products.
- Government and national organisations of schools also remain contractors.

With respect to the SVO, the Secretary of State has decided to give 70 per cent of the budget to the National Science Council (NWO) for initiating strategic, evaluative and applied educational research. This research should comprise:

- evaluation of large innovations;
- international comparative studies;
- future studies;
- large applied studies, such as cohort studies and research on educational priority policy.

The remaining 30 per cent of the budget goes to the Ministry and to the national centres for educational advice (LPC) in order to commission short-term policy research and practice-oriented research.

These proposals still have to be discussed in Parliament. Experience in the past shows that proposals on the support structure are always the subject of a lively debate in Parliament, and the final outcome is not easily predictable.

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A.5. Portugal

In the framework of the project within which this case study falls, the approach towards educational research in Portugal will place special emphasis on this area's contribution towards resolving educational problems, towards policy decisions and professional practice, and towards efforts to promote quality in education.

Structures and institutions

The development of educational research in Portugal is recent. It began to take on a significant aspect only after 1974, and more particularly in the past ten years. This development is a consequence of the creation of training courses for teachers in higher education and of masters degrees and doctorates. These, at an early stage, were aimed at training teachers, who in turn, would give these courses.

They are currently run at 20 university departments and at 14 polytechnic departments; between them, they are responsible for the pedagogical aspects of teacher training courses (polytechnics for preschool teachers at infant schools and of teachers of the 1st to 6th grades; universities for teachers of the 7th to 12th grades) and for short specialisation courses in various fields of education; the university departments are also responsible for masters courses and doctorates.

These departments sometimes have their own research facilities, usually called centres, but in many cases the teaching staff/researchers carry out their research without any specific support structure (as is mainly the case in polytechnic departments), and there are cases where a centre embraces staff from various educational departments.

But educational research has not developed in the same way in all the departments. If certain indicators are taken into account (number of senior researchers, published research papers, students who have completed a masters course or doctorate), significant development is noticeable in only seven university departments.

It is worth stressing that in some social science departments, which have also developed since 1974 (psychology, sociology, anthropology, etc.), educational research linked to the specific subjects is also undertaken.

Outside higher education institutions, educational research is undertaken at the Institute for Educational Innovation, a national research institution for the promotion of

innovation which was created in 1987 and which, as shall be seen, also finances research undertaken by other institutions. There are also private associations which develop research projects, but their researchers are almost all teaching staff/researchers from higher education; in the field of research, these associations make it possible for researchers located in different departments to be integrated into the same project.

If we take into account research-action and the innovation projects under way at schools, it is necessary to make reference to primary and secondary schools which may also be considered research institutions; in many cases, however, such initiatives are undertaken in collaboration with the higher education departments.

Resources for research

Human resources

Since research into education is closely linked to the teaching of educational disciplines, the researchers are teaching staff from the different courses mentioned or they are masters or doctorate students. Primary and secondary school teaching staff, when they undertake research, usually carry it out within the framework of masters degrees, doctorates and specialisation courses. The research projects of higher education departments also sometimes link up with primary and secondary education teaching staff.

Most of the top teaching staff/researchers (more than 100) in the field of education were trained abroad: in Belgium, France, Switzerland, Quebec, the United Kingdom, or the United States.

There is an association for researchers and teaching staff (the Portuguese Educational Research Association), created in 1990, which currently has about 700 members. To become a member of the association requires only being a teacher in the field of educational disciplines.

Material resources

The costs of premises, equipment and research staff are covered by the higher education institutions, which in fact are teaching *and research* institutions, and it is not easy to separate the costs of the two. Special financing for research projects, as well as that covered by higher education institutions, comes in part from public institutions and outside private institutions. The public institutions are the National Scientific Research Board (JNICT), which backs research in all areas, and the Institute for Educational Innovation, which supports research in the field of education insofar as it focuses on the problems raised by it.

Among the private financing institutions are the Calouste Gulbenkian Foundation, the Bernard Van Leer Foundation and the Aga Khan Foundation, the latter two mainly for research-action projects. Financing of research is also provided by the JNICT and by the Gulbenkian Foundation through scholarships for masters degrees and doctorates.

Requests for studies from higher education departments are also beginning to appear from public bodies, and various projects are being financed directly by the European Union.

Research themes and methods

If educational research is approached from a broad perspective – that is, including comparative and historical studies, analyses and theoretical reflections, the setting-up of instruments for the observation, description and diagnosis of situations, the evaluation of needs, well-grounded proposals for change, planning and evaluation of measures for educational policy and pedagogical innovation, experimental and quasi-experimental or qualitative research, and research-action studies – it could be said that there is virtually no educational theme which has not been the subject of educational research or any research methodology which has not been rehearsed.

The *raison d'être* of most research carried out so far has been the preparation of masters or doctorate dissertations. A large part of the research has been developed in the context of the theoretical and methodological framework of the classic subjects: philosophy, history, psychology, sociology and administration.

Among the educational issues touched upon by research, those which stand out are success and the lack of success in school, the evaluation of the learning process, the didactics of some subjects (natural sciences, physics, chemistry, mathematics and languages), special teaching, school management, the relations between the school and the family, education for a democracy, teacher training, the teaching profession, and the use of new information technology in learning. In this context, Portugal has taken part in various international comparative studies.

It is not easy to determine the amount of research in the field of education carried out over the past 20 years. Taking into account the number of masters and doctorate theses, it can be seen that the most complete (if still incomplete) database on this matter recorded 396 masters and 45 doctorates. There are almost 100 projects which, over the past seven years, have received financing from public or private institutions.

Priorities for research

In order to identify research priorities, it is necessary to look at the problems raised by the development of primary and secondary education today in Portugal. Grilo (1995) has defined the following priority issues:

- the new compulsory basic education model of nine years;
- combatting high failure and dropout rates, also taking into account regional imbalances;
- the ability of the school to attract and motivate pupils;
- the relevance of post-school curricula and programmes, taking into account the "employability" of young people not only in the short term but also in the

medium and long term, in view of the speed of technological change and the inherent obsolescence of training;
- trans-subject themes and non-subject learning;
- directing and managing schools;
- the relationship between education and social development.

Other issues which could be included are:

- the evaluation of processes and results of the implementation of reforms and conditions for the local creation of educational changes (innovation);
- the reorganisation of time and space for learning;
- the development of different teaching strategies, and recourse to the media and new information technologies;
- school administration beyond the school;
- vocational training;
- adult education;
- university teaching.

Above all, it is necessary to know the pupils better and to understand their points of view about their educational process and their future.

Problems and prospects

There are various problematic aspects in the development of educational research in Portugal:

- Research into education is not yet a clear political objective; although education is cited as a priority political issue, research in this field is not considered relevant to the development of education, as far as can be deduced from the policies adopted.
- Research into education in Portugal has not yet gained recognition from education professionals, from decision-making politicians, from social partners or from public opinion in general.
- The national body which finances research in various scientific fields (the JNICT) has not yet drawn up a consistent policy towards research into education; it is not a priority area, nor does it merit treatment which reflects the sector's social importance.
- Demand for research from the various bodies linked to education and training, whether it be through requests to the higher education centres or by setting up their own research facilities, has been limited and is only now beginning to emerge.
- Few higher education institutions have a concerted policy of promoting educational research: this matter is left to the initiative of each staff member, without any effort being put into creating the conditions (in terms of time and of other resources) for the research; the time available is what is left over after teaching and management duties, and the stimulation is that provided by the demands of career advancement; the situation is worse in the polytechnic departments.

- The documentation centres of the educational departments vary greatly in terms of the type of document; many are not computerised, neither are the documents themselves indexed so as to facilitate consultation; also, there is still no means of easy access to consultation of documents between centres.
- The critical mass made up of qualified researchers is still small and dispersed, not only in the geographical sense but also insofar as theoretical and methodological aspects are concerned, which makes it difficult to pool strengths in teams with larger projects; available time to invest in research is for many very restricted, and the national organisational structures are still fragile.
- Research undertaken into education is largely confined to academic circles because it is usually aimed at obtaining university qualifications (masters degrees, doctorates) or at moving up the career scales of higher education teaching staff; the first objective is training staff and researchers, undertaken on an individual basis.
- The starting point for research into education is often not the detection of problems in the world of education, and the results do not appear to be relevant to the behaviour of decision-making politicians and education professionals.
- There is still no significant research based on schools or where there is participation of teachers concerned with making the most of their knowledge and encouraging the interaction of that knowledge with that of researchers.
- Much of the research carried out, since it is in the form of university theses, is published for a restricted audience, there still being no national database on these or on research projects under way; and there is also no tradition of dialogue, debate and critical discussion on research presented at conferences or published.

Planned innovations

It may be conjectured that the problems which hinder the contribution of educational research in Portugal to decisions on education policy and towards stimulating concepts and practices among education professionals are, in part, the same as those encountered in other countries and, in part again, specific to the case of social development and of the development of educational sciences in Portugal. Considering the future outlook only in terms of this last aspect, the problems referred to can be linked to the recent nature of the development of educational research in Portugal; however, conditions are in place for a significantly different phase to take shape over the next few years. For example:

- There will be an increase in the number of qualified researchers, free from the concerns of academic advancement and with more availability for research.
- The bodies linked to education will resort more and more to the research institutions for studies to guide their work.
- Competition between higher education bodies and the progressive evaluation of them is bound to make them focus increasingly on relevant social problems.
- The Institute for Educational Innovation will develop a clearer policy of support for research considered relevant to the development of education.

- The fact that more and more primary and secondary school teachers have masters degrees in education will contribute towards research which is based on schools and enjoys the participation, in co-operation with higher education researchers, of the teachers who work in them.
- The ever larger investment of higher education institutions in continuous teacher training (for which substantial Community funds are available) will lead researchers to better perceive what is relevant knowledge for education practice.
- The creation, under way at the Institute for Educational Innovation, of a database of masters and doctorate theses and of research projects, as well as the prospect, now being studied, of making it possible in the medium term to consult thematically from any centre the collection of all the educational documentation centres, will facilitate interaction between researchers and education officials.

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A.6. Sweden

Until the 1950s, Swedish educational research was strongly influenced by psychological research. However, with the school reform work initiated during the 1950s and into the 1960s, educational research developed, gradually, a territory of its own. Since that time the social science orientation of educational research has grown, while the link with the behavioural sciences weakened. This development is elucidated in the sections that follow.

Traditionally, educational research has been located within, and has been the responsibility of the universities. In the early decades of the century, the departments of education were exclusively found within universities. From the 1960s and onwards, however, schools of education were created that also developed their own departments for research.

The implication of these institutional arrangements for research is that the description to follow is concerned with commissioned or sectorial research. This means that research is seen in relation to, and motivated by, the knowledge and development needs of a certain societal sector, in the present case, the education system.

Structures and institutions

Since the 1950s, the Swedish education system has been progressively reformed in the context of welfare state development. Education as part of an expanding public sector was a focus of political attention, and the system became centralised and framed by rules in the course of the reforms, which have emphasized the social functions of schools and schooling.

Changes were planned or under way in 1962 when the former National Board of Education (NBE), the agency responsible for implementing the changes, was given funds to be used for educational research in support of reform. At that time, considerable research activities were also sponsored by state commissions and other bodies. Comprehensive schools were to be established throughout the country and the first national curriculum was to be implemented. A centralistic model of steering and managing change toward the new goals and means of education was adopted by the authorities. Systems theory and concepts of educational technology based on behaviourism exerted strong

influence and led the NBE to encourage R&D in educational technology, thus emphasizing a close link between policy priorities and research orientation.

The relationship between policy objectives and research orientation became less obvious during the 1970s and 1980s, when the technological approach to reform planning was questioned and different approaches to research grew stronger. From the 1970s onwards, however, knowledge-productive analytical research increased and empirical research expanded, at the expense of more theorising. Research with a mair focus on the consequences of education and individual conditions and effects of education in an administrative perspective became more distinct well into the 1980s (Åasen, 1993).

Thus, in the NBE-sponsored research programme a behavioural science perspective conditioned the choice of research themes – individual capacity, learning and cognition. Less attention was paid to the perspectives emanating from the wider social sciences and the liberal arts. The research orientation of the NBE was framed in accordance with the dominating political and administrative concerns of the times. This orientation was overruled, however, as policy directions and system characteristics changed drastically during the 1980s.

Beginning in the 1980s and continuing into the 1990s, the Swedish education system experienced a development towards increased decentralisation and deregulation. The administrative system changed and local authorities were given increased responsibilities. Part of this was the abolition in 1991 of the National Board of Education (NBE) and the establishment of a National Agency of Education (NAE). The new role of the state is to steer the system by specifying the goals of education and by specifying nationally applicable syllabi. Another role of the state is to evaluate whether the goals are being met and to offer guidance about best practice. A third aspect of the new role of the state in education is that it should promote school improvement by operating an interactive information system resulting in self-reflection and changed action. The overriding objective is to see that schools work and develop in accordance with the directions decided by parliament and the government.

The National Agency for Education

As a government authority, the main task of the National Agency for Education is to guide, evaluate and work for the development of the school. These tasks are achieved by measures taken within the programme structure of the Agency. This structure consists of four programmes for the collection and analysis of data about the school system: one for evaluation, one for studies follow-up, one for inspection, and one for school research. A fifth programme concentrates on the support and development structure. The five programmes are intended to form an integrated whole, with the school research programme providing the links.

Today the educational system is governed by goals and control of results. It might be said that the centralised and rule-governed system has changed from an *ex ante* system, in which ends and means are tested before implementation, to an *ex post* system characterised by goal orientation and the evaluation of results, in which local responsibility involves curriculum work by teaching professionals and local administrators.

It is the business of the NAE to manage and steer the system by informative measures influencing the knowledge base used by professionals and local decision-makers. In this, research has its role to play. This new situation has required an epistemological discussion and eventually a reorientation of the school research programme.

Resources for research

During the 1980s, a total of some 300 projects received research funding from the former National Board of Education. Expenditure for the period totalled about Skr 150 million, and the work involved between 450 and 500 researchers. NBE-funded research in the education sector, then, was relatively extensive, though of modest proportions by comparison with total national government spending on the school sector. Over the years, the research allocation has never exceeded 0.36 per cent of total national government expenditure on the school system. In 1994/95, it equalled roughly 0.04 per cent of total state spending on education and 0.07 per cent of the total cost of public-sector schooling.

The National School Agency's funding allocation for research within the school system totalled nearly Skr 28 million for the 1995/96 fiscal year.

There are several research-funding agencies apart from the National Agency for Education and its predecessor, the National Board of Education. The five major ones are the Council for Research in the Humanities and Social Sciences (HSFR), the Swedish Council for Planning and Co-ordination of Research (FRN), the Bank of Sweden Tercentenary Foundation (RJ), the Council for Social Research (SFR), and the Swedish Work Environment Fund (AMFO). Research funds disbursed by these five agencies has averaged Skr 11 million annually since about 1980.

By far the largest amount of funding came from HSFR, with RJ and FRN between them distributing almost as much. Grants for school research from the other two funding agencies were on a lower level. If the size of allocations per project and average allocation per project and year is considered, however, a slightly different picture emerges. RJ's project allocations were more than twice as large as those of HSFR, and in terms of annual amounts, too, RJ's funding levels were appreciably higher. These distinctions apparently derive from a difference in funding principles. RJ concentrates its support mainly on long-term projects in selected fields, whereas HSFR aims to finance a wide spectrum of research interests, which, within a limited spending framework, must to some extent detract from the size of grants for individual projects.

The overall picture of research funding bears witness to a fairly consistent aim of contributing towards greater insight and wider perspectives where various school questions are concerned – as distinct from purely instrumental and technical research objectives. One manifestation of this endeavour is that in the majority of projects the empirical problems have been linked to theory that has highlighted general aspects of the tangible pedagogical issues.

Research themes and methods

Research has to be aimed at stimulating critical reflection about actions and their meaning in a context of school and society. This is the first principle behind the research programme formulated by the NAE. The second principle is that professional teachers and school leaders and decision-makers at national and local levels form the two target groups for the research commissioned by the Agency.

Teacher professionalism is based on indeterminate knowledge for indeterminate settings. The implication for research is that its prime task is to ask the necessary questions as points of departure for those who want to utilise the knowledge generated by research. The model of R&D that understands teaching as technique is replaced by a model that sees teaching as action in a social and cultural setting and on a basis of knowledge that permits reflection individually and collectively. There is thus a change from an instrumental to an ecological rationality that relates knowledge, values and goal concepts of schools and schooling to contextual factors. This is another way of talking about "indeterminate knowledge in indeterminate settings".

The decision-makers are the second target group for research. The programme builds mainly on the assumption that the underlying principles of teaching are also applicable to decison making and educational planning. These do not take place as linear processes in which technical solutions are balanced against each other and tested against defined criteria. Instead, decisions emerge successively and (scientific) knowledge has the function of describing problems and determining their context. Planning and decision-making thus involve acting.

An exclusively behavioural approach is insufficient if the aim is to develop theories and conceptual systems that promote insights and understanding by research. Educational research therefore has to be oriented towards social science and liberal arts, which implies perceiving education as a social phenomenon. In this perspective comparative research is to be encouraged.

Epistemological considerations must take precedence over organisational issues in the formulation of a strategic research programme. The issue of knowledge use should be considered in an epistemological context before the ramifications of a more administrative nature are considered. According to the principles discussed so far, the use of knowledge should be primarily considered in relation to the needs of the practitioners. In the same way as education and teaching are conceptualised as a human and social encounter where both teachers and pupils are acting and bringing in previous knowledge and experience, the issue of knowledge utilisation must also be conceptualised as an encounter. This perspective rules out the top-down dissemination of knowledge. Basically, knowledge use is a matter of power, and this draws attention to where the power is situated in the system.

In comparing Norway and Sweden, Telhaug (forthcoming) notes that the theoretical basis of research is now being emphasized. In both countries the ambition is to loosen up the connection between educational and natural science and psychological research. To this end, the research programme of the NAE explicitly states that research must be given a humanistic orientation. Telhaug is, however, critical of the research programme in

terms of its relationship with Sweden's political context. In Norway, he claims, educational research is more clearly placed in an overarching political framework, with the goal of contributing to economic growth and sustaining an active welfare society. Accordingly, the research programme is deduced from an analysis of the relevant social needs and, at least indirectly, informed by a social philosophy.

Priorities for research

The school research programme of the National Agency for Education is structured in five parts:

Part 1. Base programmes focusing on certain fields of knowledge.

Part 2. Studies related to the base programmes.

Part 3. Knowledge surveys and research about research.

Part 4. Research not directly connected with the base programmes.

Part 5. Support functions and measures to streamline research utilisation.

The following five fields of knowledge are included in the research programme as basic programmes:

Part 1. School activities: the content, design, and results of education.

Part 2. School as a cultural and working environment.

Part 3. Control and management of education: central, regional and local educational planning.

Part 4. The effects and efficiency of education.

Part 5. Education and educational policy in society.

In the new programme, instrumentally focused R&D has been replaced by research evaluated by cognitive criteria that encourage professionals and decision-makers to question their self-understanding, both individually and collectively. The focus of NAE's current research programme is on long-term commitments and a wider scope for research that aims to develop theories and concepts which can be used in understanding school activities and their preconditions.

Further implications for policy

This section sets out the deliberations of the National Board of Education on the focus of future school research. The main tasks entrusted to the Agency are the national follow-up and evaluation of education and the promotion of educational development. It is required every three years, in its in-depth budget requests, to present a concise description and analysis of the situation within its field of responsibility. This mandate for educational research involves concrete tasks, some of them in the short term and others in the longer term.

Establishing a baseline for gauging school improvement

The school system as it is now is the result of a long period of reform. If the direction of reform is to be radically altered, then those carried out hitherto should be studied and evaluated. This, at the same time, will serve to plot a necessary baseline for the continuing task of changing and improving education. A complicating factor here is that it is impossible to speak of a single baseline. One possible research approach would be to reflect, through a content analysis, the extent to which the stakeholders' views of Swedish schools become more favourable or unfavourable during a given period, for example the 1980s. This in turn might prompt one to ask how far a changed view of problems has also come to reflect thinking in programme terms within teachers' professional associations or within education policy generally.

Greater emphasis on comparative aspects

Greater importance is to be attached to comparative studies, and continuing efforts are to be made to involve a diversity of academic disciplines in studies of problems relating to the school sector. This also implies a greater interest in collaboration with researchers in other countries. The international profile is to be highlighted. Educational research should concentrate more than hitherto on projects and studies that are comparative in nature, which permit comparisons over time or between different school systems, or which include international comparative analyses. The decentralisation of Swedish schooling and the reduction of detailed control by national government means that in future, variations between municipalities within the country could be a source of interesting comparisons on a scientific basis. Probably educational research can also help make it possible for organisational models, teaching methods, etc. which have been found to work well in other countries, to be tested in Sweden as well, and *vice versa*. Greater emphasis on comparative studies, especially those of an international nature, will make heavier demands on databases, knowledge of and perspective on the school systems of other countries, co-operation and, not least, a long-term approach to research funding.

Supporting methodological development

Most evaluative studies are based on some form of comparison between different entities. Results are compared with defined objectives, boys with girls, schools today with schools yesterday, Swedish schools with schools in Europe, and so on. Comparisons of this kind nearly always create methodological problems at different levels, ranging from survey design to processing of data and statistical methods. If it is decided to continue to follow up Swedish school developments by means of evaluative studies, it is important that the methods be viewed in a critical light. During the 1980s, attention was drawn to the need for theory development in evaluation research. That need still exists, but the theory development which has occurred hitherto will, together with the evaluation research of the next few years, generate a need for further development of methods in the evaluation context. The schools of tomorrow should not be evaluated by the research methods of the 1970s. Comparative educational research will be faced with growing

pressure to develop research methods, so as to enable meaningful national and international comparisons to be made. These include methods for describing and interrelating system characteristics, classroom practice and pupil achievement. This process would also include a basic analysis of the values underlying evaluation research.

Promoting research that opens up new perspectives

The many and great changes that have taken place in the world in recent years are generating a need for knowledge in new fields and for new perspectives on existing knowledge. This means that there will be calls for more international and comparative educational research. With world migration on the increase, questions concerning the importance of cultural encounters will demand more and more attention. Immigration will also continue to have an impact on local schooling and its content, as will the result of ever more young people taking part in exchange programmes.

Promoting the long-term development of knowledge

NAE's research programme is intended to encourage the long-term development of knowledge. It should be oriented towards gaining an understanding and new insights as a base for action. Research involves explicit thinking about phenomena, thinking that is based on definite premises. Research may be considered as an analysing and critically oriented form of language aimed at the development of theories, concepts and conceptual systems that are used for gaining insights and understanding. This observation, however, points to a dilemma: on the one hand, it means that research takes time; on the other, it signifies that the need for depth of approach has to lead to restrictions in breadth. Depth and specialisation go together, but the limitations may be counterbalanced by encouraging the networking of researchers working in similar fields.

Conclusion

As explained above, the National Agency of Education is the main funder of educational research in Sweden. This gives a double responsibility to the Agency. As responsible for the development of the schools, it needs good knowledge for taking sound decisions. This knowledge is generated by research but also derives from follow-up studies and evaluation, from development work and inspection organised as projects internally and externally to the Agency. This is the first responsibility of the Agency, which, thus, has to promote good research to get good support. This need of the Agency brings to the fore its second responsibility, that is to promote qualitatively high-standing educational research as part of the disciplinary development of the field. Again, this responsibility follows from the Agency being the main funder for school research. This offers the Agency a way to reconcile the potential conflict between its own needs for relevance of research and the disciplinary interests associated with this developing field of study.

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A.7. Switzerland

Although educational research has been carried out in Geneva since the late nineteenth century, the real beginning and the establishment of educational research throughout Switzerland dates from the 1965-75 period. In subsequent years, researchers have continuously worked to build a relationship of trust with educational policy-makers and practitioners. Their aim has been to establish a climate of confidence among the different stakeholders in the field, so that it can grow and develop.

The condition, problems and prospects of Swiss educational research have been addressed in a number of recent studies conducted by the Swiss Educational Research Association, the Swiss Science Council and the Swiss National Scientific Research Fund. Among the major problems revealed by these studies are the following:

- In the Swiss multilevel system of educational organisation a distinction has to be made between fundamental research determined on the basis of purely scientific criteria, and applied research and experimental development at the cantonal, regional and national level. The distribution of educational R&D among these three levels and the role it plays at each level have only been partially defined and should be clarified.
- Owing to the structure of the Swiss educational system, educational R&D takes mainly place in a large number of decentralised institutions. As a consequence, most of these institutions are small and do not reach the critical mass; educational R&D therefore is fragmented to a large extent. Solutions to this problem are to be looked for in more co-ordination, co-operation and networking on the one hand, and more thematical and institutional specialisation on the other.
- Whereas certain fields are well covered (mainly educational psychology and didactical studies at the micro-level of compulsory schooling), there are serious deficiencies in others. As regards the levels of education, research into upper-secondary, tertiary and post-tertiary education is insufficient. Educational sociology and the economics of education are also underrepresented. Third, the study of macro-level issues in the relationship between education and the society is beset with deficiencies.
- Finally, there is a mismatch between policy priorities defined at the national level and research priorities determined primarily by the needs of single cantons.

Structures and institutions

The structure of educational research is in keeping with the federal and decentralised structure of the Swiss educational system and the country's small size. Thus, unlike many countries, Switzerland does not have a national educational research institute, and its R&D institutions are located at the cantonal or regional level. The 1989 directory of institutions listed 76 institutions, comprising five which were relatively large, 13 of medium size, and a large number which were either small or very small. These institutions can be broken down into the following types:

- university institutions (39);
- institutions within administrations;
  - at cantonal level (21)
  - at regional level (2)
  - at national level (6)
- private and semi-private institutions (8).

Research output is approximately the same for university institutions and institutions within the administration, although according to the most recent trend the latter's share is growing.

The prevalence of small institutions can be viewed and interpreted in different ways, either negatively, as a sign of fragmentation, or positively – and this is true of cantonal institutions in particular – as a means of ensuring close links between research, policy and administration. However, this raises another problem, *i.e.* the fact that these small institutions have yet to reach a certain "critical mass". Co-ordination and co-operation are the only solutions to this dilemma.

If the development of educational research in the French-speaking regions is compared with that of the German-speaking regions of Switzerland, then the French-speaking region is clearly ahead, for example in terms of the number and size of institutions.

The Swiss Educational Research Association (SSRE), founded in 1975, and the Swiss Association for Applied Research in Vocational Training (SRFP), founded in 1987, play an important role in supporting, promoting and organising educational research and in reinforcing its identity. Concrete proposals for further institutional development are currently under discussion. They focus on reinforcing and if necessary creating new research training centres and networks, as well as finding ways of solving the problem of the critical mass of small institutions. Two proposals have been advanced to date: the first would comprise three centres (including a bilingual one which would cut across the linguistic border), while the second would have only two centres (a French-speaking and a German-speaking one, which would consequently not cross the linguistic border). In both models, the centres would act as administrative hubs for the networks of co-operation between university and non-university institutions. This strategy aims at improving co-ordination and co-operation among three types of institution:

- university institutions, especially in German-speaking Switzerland;
- institutions within the administration;

- university institutions and those within the administration, especially in German-speaking Switzerland.

A major reform aimed at creating specialised *hautes écoles* in the post-secondary non-university sector is currently under way. Teacher training is to be included in the *hautes écoles pédagogiques* or HEPs (higher teacher training schools), which will have to perform important functions in R&D. Hence a new type of institution will enrich educational R&D.

Resources for research

The cantons are by far the largest source of funding for educational research (47 per cent of the total). The confederate government adds another 44 per cent, primarily through the Swiss National Scientific Research Fund. The municipalities or communes (3 per cent) and the private sector (about 6 per cent) play only marginal roles.

Annual spending on educational research (excluding capital expenditures) amounted to SF5.6 million in 1980 and SF7 million in 1990. This represents approximately 0.06 per cent of total public expenditure on education and research, and is far below the target set by the Swiss Science Council in 1973 (1.5 to 2 per cent). By the mid-1990s, average annual spending on educational research will have temporarily increased by approximately SF3 million, thanks to the National Research Programme devoted to "The Effectiveness of our Educational Systems".

A distinction has to be made between a core group engaged in long-term, continuous educational research (100-200 researchers) and a less clear-cut group whose work in this field tends to be temporary or intermittent. In 1990, there were in all some 120 full-time equivalent research positions.

Research themes and methods

By far the largest share of all research studies is devoted to primary and lower secondary schooling (each accounting for about 20 per cent of the total). Given that the major reforms currently under way affect the upper- and post-secondary levels, one is struck by a mismatch between policy priorities defined at the national level and research priorities determined primarily by the needs of single cantons. If projects are classified by domains, then it emerges that there is an increasing amount of research on teaching and learning methods, and a decrease in research on the social, economic, political and legal aspects of the educational system.

Priorities for research

Four major national research programmes (PNR) have been carried out over the last 15 years. These programmes give a clear indication of the priorities:

- problems of social integration in Switzerland (PNR 3);
- education and working life (vocational education and continuing vocational training) (PNR 8);
- effectiveness of educational systems in the face of demographic and technological change, and problems posed by multilingualism (PNR 33);
- examination of the condition of primary schooling (SIPRI) (a large-scale R&D project carried out by the Swiss Conference of Cantonal Directors of Public Instruction).

Problems and challenges

The analysis of Swiss educational research revealed several deficiencies in the scope and orientation of R&D. There is a lack of research on upper- and post-secondary education, including research on vocational training, university and non-university institutions, and adult education and continuing vocational training. There is also a dearth of studies in the sociology and economics of education. Further, basic research is in a weak position compared with applied research.

Swiss educational research appears to be open to a variety of approaches. The empirical methods of the social sciences are used together with the interpretive methods of the human sciences, although the former are predominant. The most frequently used techniques are questionnaires, interviews and tests.

The first challenge faced by Swiss educational research is to integrate its elements into a co-ordinated system and to reinforce the links between this system and educational policy, administration, and practice. The two basic elements of this system are fundamental research and applied R&D at the cantonal, regional and national level.

Several initiatives have been taken to improve co-ordination. Two regional institutions complete the cantonal structure for school development and educational research (IRDP in French-speaking Switzerland and ZBS in central Switzerland), and co-ordinating bodies – the Swiss Conference for the Co-ordination of Educational Research (CORECHED) and the Swiss Conference of Directors of Educational Development and Research Centres (CODICRE) – have been established. The mandate of the first body, created in 1991, is to improve co-operation between educational policy and research. Its membership comprises all the major stakeholders in educational R&D.

The challenges in the Swiss context can be summed up by the following questions: Does Switzerland need a national educational research policy? Is a national educational research policy possible in a federal and decentralised nation? It is difficult to answer these questions in a country that does not have a body responsible for defining national educational goals and priorities. From the standpoint of research, however, it is precisely

a federal and decentralised country that needs a national educational research policy. The various policy actors have yet to reach a consensus on the need for such a national policy.

The ultimate objective is to establish a co-ordinated educational research system in which basic research is reinforced and where there is a clear articulation of applied R&D at the cantonal, regional and national level. Applied research would then become an accepted and normal part of educational policy and administration. In light of this overall objective, future efforts to develop Swiss educational research should be focused on the following six areas:

- laying the foundations for a national educational research policy;
- creating research-training centres and networks;
- reinforcing the links between applied research and educational practitioners;
- eliminating the most serious imbalances in the themes addressed by educational researchers;
- improving the basic and further training of educational researchers;
- strengthening international co-operation and specialisation in the fields of basic research and applied R&D.

Planned innovations

Among the main desiderata for further development of educational R&D in Switzerland, the following have reached the stage of proposed or planned innovations:

- The Swiss Conference of Cantonal Directors of Public Instruction has published a first planning report concerning the new type of teacher training institution (HEP). The HEPs will also be a new, additional type of educational R&D institution: R&D will be closely linked to teacher training (reflective teacher, practician-researcher). This will also add a new dimension to the relationship between the teaching profession and educational R&D.
- There are concrete proposals concerning a three- or eventually two-pole model of university-based educational R&D. At the same time, these poles will be the centres of networks formed by university and non-university institutions, more specialised than today.
- CORECHED, in collaboration with the Confederation, the cantons and all other stakeholders in the field of educational R&D, is preparing the ground for several new initiatives – for example, the regular launching of educational R&D projects undertaken at national level; new mechanisms for the financing of national projects or Swiss participation in international projects; and the development of medium-term strategic objectives for the development of educational R&D at national level.
- CORECHED will bi-annually produce a report on the condition, development and perspectives of educational R&D in Switzerland.

A.8. United States

This case study reviews the significant developments in the postwar history of the federal role in educational research, development and dissemination. The focus is on the most recent events, for example, the policy shift that occurred during the 1980s because of an increased concern with the performance of American students.

Phase One – The postwar era

The postwar period saw an increased interest in the power of research to improve many aspects of American life. The mood of the era was powerfully influenced by the cold-war rivalry between the United States and the former Soviet Union. The competition between the two countries was felt most intensely when the Soviets succeeded in launching a sputnik spacecraft ahead of the Americans. Not only did this development hasten the establishment of the National Science Foundation (NSF) in the 1950s, with an exclusive mission to improve science education in the United States but also the passage of the 1954 Cooperative Research Act. This Act signalled the end of a dormant federal role that had lasted for a 90-year period since the establishment of the first Office of Education in 1864. The Act enabled funding for university researchers to compete for field-initiated research funding.

The programme aimed at developing field-initiated research grew rapidly, from US$1 million in 1955 to $70 million in 1966. During this "post-Sputnik" period, concern grew that the approach taken was insufficiently connected to changing school practice and was not attracting the best minds necessary to significantly upgrade American schooling. In order to address these problems, the federal role was expanded in three major directions:

- In 1963, 10 national R&D centres were created to focus a "critical mass" of effort located at one site to tackle major problems in education.
- In 1966, 20 regional laboratories were established to test in practice the innovations developed by the research centres.
- Also in 1966, the Educational Resources Information Center (ERIC) was set up to provide a means of disseminating all federal R&D through 12 clearing-houses that would allow teachers and administrators to both disseminate and retrieve research information.

These initiatives were spurred on by the mood surrounding the package of Great Society programmes launched by President Lyndon Johnson who as a former teacher believed strongly that the federal government needed to take a stronger role to improve the quality of schooling provided by the states. In 1965 the Elementary and Secondary Education Act was passed. It became a cornerstone of the Great Society programme, with an unprecedented budget of more than $1 billion dollars to provide highly targeted funding to the states for compensatory education programmes. The budget for research saw a related increase, with funds rising from $19.3 million in 1964 to $100 million in 1966 (see Committee on Education and Labor, 1993).

Phase Two – The creation of the National Institute of Education

The creation of the National Institute of Education (NIE) in 1971 was seen by some as a reaction to the Great Society programmes. Established by Republican President Richard Nixon whose top educational advisor was (the now Senator) Daniel Patrick Moynihan, a Harvard professor who believed that the Great Society programmes were not working well. Moynihan convinced the President that rather than expanding federal funding for education, it would be better to have educators focus more on ways to increase student achievement levels. For some, NIE was launched precisely because the President needed a way of justifying reduced federal expenditures of education – others saw its creation as a recognition that educational research had come of age as a discipline that could provide powerful answers to change the nature of teaching and learning in American classrooms and contribute to solving endemic problems of educational inequality (see Sproull *et al.*, 1978, p. 33). The preamble to NIE's authorising legislation expressed just such a faith in the capacity of research to find answers to questions of relevance to schools improvement:

> "It is the policy of the United States to provide every person an equal opportunity to receive an education of high quality regardless of race, colour, religion, sex, national origin, or social class (...). To achieve equality will require far more dependable knowledge about the processes of learning and education than now exists or can be expected from present research and experimentation in this field" (Section 405a.1, General Education Provisions Act, 20 U.S.C. 122e, enacted June 23, 1972).

The optimism surrounding the birth of NIE was not to last – as the agency's ambitious mandate did not square with its modest budgets. Congressional support for the agency quickly disappeared as NIE managers found it difficult to integrate the host of programmes it had inherited into a coherent mission and explain that work to Congress's satisfaction. The budget rose from an initial $136 million in 1973 to approximately half of that total the next year and only made modest gains throughout the rest of the decade.

In 1979 the Department of Education was established by President Carter, and as part of that reorganisation the Office of Educational Research and Improvement (OERI) was created as a "holding company" for programmes that were still to be integrated within NIE. In a subsequent reorganisation in 1985, NIE was abolished and its functions

placed in five offices: the Office of Research, the Center for Educational Statistics, Programmes for the Improvement of Practice, Library Programmes, and Information Services. The decline in federal resources for educational R&D had continued unabated since 1971 – the total drop between 1973 and 1989 (in constant 1990 dollars) was 88 per cent.

Phase Three – The relaunching of the federal role

In 1987, Congressman Major Owens assumed the chairmanship of the House Subcommittee on Select Education. A leading advocate for education on the Congressional Black Caucus, Owens was the first librarian to be elected to Congress. He was also a civil rights worker and believer in community empowerment. He used his new chairmanship to oppose budget cuts in education as well as many areas of human services. After being handed a General Accounting Office report in 1987 on the dramatic decline in funds for educational R&D, he decided to make OERI a special priority. He reacted to several elements in the report:

- the comparatively low level of funding for educational research as compared to other federal research functions. Federal expenditures for education were one-third of those for R&D in agriculture and transportation and 4 per cent of those for health (see Committee on Education and Labor, 1988);
- the rapid turnover of leadership within the agency. Seven of the ten former administrators of OERI/NIE held their positions for less than two years. (The turmoil of top leadership at NIE/OERI compared unfavourably with the stability enjoyed by other research agencies. There have been nine agency leaders over the past 19 years, compared with six directors of the NSF, five at the National Institutes of Health (NIH) and three at the Agricultural Research Service);
- the influence of the rapid changes of leadership on the offices' ability to set a stable and credible set of priorities.

The abyss into which educational research had fallen disturbed him all the more in the light of reports such as *A Nation At Risk* (National Commission on Excellence in Education, 1983) and a host of others that were urging that dramatic action was needed to improve the quality of American schools, particularly for minority and poor students. The Subcommittee conducted 18 hearings between 1987 and 1993, listening to 112 witnesses. The hearings seldom deserted the theme of underfunding and of OERI's failure to attract broad support for a systematic attack on the causes of inequality. Chairman Owens repeatedly questioned administration witnesses about what they were doing to carry out NIE's original mission statement. What clearly emerged was the agency's inability to "create a set of compelling targets for research; as a result the enterprise lacks accountability" (Committee on Education and Labor, 1993).

During the course of the hearings, Chairman Owens introduced a bill to establish a new National Institute for the Education of At-Risk Students that would be administered by OERI. Owens stated that:

"New initiatives are needed to assist with the herculean task of improving education for the large numbers of at-risk students. The dimensions of these education failures and their negative consequences continue to expand out of control (...). An Institute for the Education of At-Risk Students can play a major role in reversing the present dangerous landslide into official helplessness" (Oversight hearing on OERI, statement of Cong. Major R. Owens, April 25, 1991).

Owens' bold changes to remedy the OERI's downward spiral included the establishment of the Institute for the Education of At-Risk Students, together with four other companion institutes designed to focus OERI's mission on a stable agenda. These other institutes were: the Institute for Innovation in Educational Governance, Finance, Policy-making and Management; the National Institute for Early Childhood Development and Education; the National Institute on Student Achievement; and the National Institute for Postsecondary Education, Libraries and Lifelong Learning. Additionally, he proposed a new policy-making board to replace an ineffective advisory board: the National Educational Research Policy and Priorities Board, modelled on the one that had assisted the NSF to retain a credible and stable research agenda.

Without doubt it was the proposed policy-making board that drew the most controversy from the prior administration, that felt it would lead to micro-management of administration policies by outside interest groups. The Committee report details the arguments that the administration put forward as their objections, calling them "an inaccurate, an unfair characterization of the groups that the House proposed to have nominating power as 'special interests'" (House of Representatives Report 102-845, p. 21, 102nd Congress). In the legislation that passed in the following Congress, provisions were made to "actively solicit and give due consideration to a specified number of organisations representing teachers, parents, librarians, school administrators, Indians and other education related organizations" (P.L. 103-227, Part B, Section 921). The legislation was finally passed as P.L. 103-227 on March 31, 1994).

Structures and institutions

OERI is authorised by legislation as the leading educational R&D agency within the Department of Education. The system of divided government in the United States means that Congress has a strong hand in both setting out the administrative framework for executive branch agencies (of which the Department of Education is one), its broad policy direction, as well as the funding of the various programmes it administers. The most recent authorisation runs until 1999 and involved five years of deliberation. It had the benefit of two major reports, one from the National Academy of Sciences (NAS) and the other from the National Academy of Education (NAE). The new legislation departs from the one govering the former OERI in a number of significant respects:

- The federal government can no longer set the nation's research agenda in isolation from the needs of practitioners, policy-makers and educators in general, and that in order to be relevant the OERI has to be a central rather than a marginal player in the nation's reform efforts. The legislation's placement within the

President's first major education bill – Goals 2000: Educate America Act – was more than merely symbolic. It signalled that OERI was now, in many areas of its legislative mandate, aligned with the new administration's desire to achieve the eight national goals.

- OERI had to become more integrated with the R&D activities in the rest of the Department of Education. OERI was specifically charged to become the leading office to co-ordinate all the R&D within the Department of Education as well as throughout the federal government.
- The new law represents an implicit recognition that the demand for research knowledge has to be in better balance with its supply, and that unless the needs of practitioners in particular are taken into consideration, there is a real danger of the enterprise consisting of nothing more than researchers talking to fellow researchers. In essence, the new OERI has to connect more of its work to practice. Not only are the national institutes charged to support the information needs of policy-makers and to co-ordinate with the Regional Laboratories to ensure their responsiveness to the needs of teachers, the new Office of Reform Assistance and Dissemination also holds the promise that finally, key elements of the Department's dissemination infrastructure – the Regional Laboratory system, the Educational Research Information Clearinghouses (ERIC) and the National Diffusion Network (NDN) – can be integrated with the work of the Institutes to promote more useful products and services for schools.
- Stability and continuity of themes are also judged as important. The National Educational Research Policy and Priorities Board will work with the Assistant Secretary to craft a research agenda for up to 15 years. National institutes are to ensure that a "balanced portfolio of research" is carried out within their areas. Research centres form part of this "balanced portfolio" and are to be administered within Institutes to ensure that such work is cumulative.

Five national institutes are authorisd by the new law: the Institute for Research on Student Achievement, Curriculum and Assessment; the Institute for Research on At-risk Students; the Institute for Research on Early Childhood Development and Education; the Institute for Research on Educational Governance, Finance, Policy-making and Management; and the Institute for Research on Post-secondary Education, Libraries and Lifelong Learning. In addition to these five institutes, the National Center for Education Statistics (NCES) within OERI supports the collection of a wide range of national and international data about the status and progress of education. Additionally, the other major programme evaluation activities of the Department of Education are the responsibility of the Office of Planning and Evaluation (OPE).

Resources for research

Educational R&D in the United States is a highly complex and often fragmented field. The largest amount of funding for educational research broadly defined is provided by the federal government. The NAE (National Academy of Education, 1991) found a

wide array of support for education to include (in addition to the federal government) important contributions from states, foundations and universities. The federal government supports policy studies, programme development and fundamental research both within specific programme offices of the Department of Education (such as the Office of Special Education and Rehabilitative Services and the Office of Bilingual Education) as well as primarily through OERI (the successor to the National Institute of Education).

In contrast to other sectors, the federal government's investment in educational research has been relatively modest. It has not attracted the high and stable levels of funding that sectors such as agriculture, transportation, energy, space, health or defence have enjoyed. According to a review conducted by the NAS (National Academy of Sciences, 1992, p. 100), in 1990 educational R&D expenditures were one-third of those for R&D in agriculture and transportation and only 4 per cent of the federal funds spent on medical R&D.

Part of the reason for this limited role was due to the states' legal responsibilities for maintaining a system of compulsory schooling. Another equally powerful factor was – until recently – the serious failure to build substantial political support for the funding of educational R&D.

During the 1980s the research, improvement and dissemination activities of OERI were conducted primarily by regional educational laboratories, national research and development centres and information clearing-houses, and ever larger portions of OERI's budget were directed towards such institutions. This was accompanied by a shift from support for individual researchers to support for institutions. Under the current authorisation, OERI is mandated to allocate at least 15 per cent of its appropriation for institutes to field-initiated studies.

Within the OERI, the NCES supports the collection and reporting of a wide range of both national and international data about the status and progress of education. The NCES collects data on a broad range of key indicators on the condition of education. Its annual *Digest of Education Statistics*, for example, includes more than 350 statistical tables and figures that provide both cross-sectional and trend information on a broad range of subjects in education. The NCES also collects longitudinal surveys, for example the High School and Beyond Survey and the National Longitudinal Study. In addition, the NCES supports a nationally representative assessment of student performance in the United States – the National Assessment of Educational Progress (NAEP).

The OPE has primary responsibility for the evaluation of Department of Education programmes, and works with programme offices to ensure the appropriate application of high-quality evaluations to specific programmes. Many of these studies are mandated by Congress, which is interested in knowing whether its investments in certain innovations and practices are effective. In practice, the division of labour between the OERI and OPE has not always been clear-cut.

In 1990, OERI held the largest single R&D-centre competition ever conducted by the Department. The largest previous competition – ten centres in 1985 – was only half this size. Successful applicants could retain their funding by law for no longer than five years. During the course of a year-long public planning process, the Department sought advice from the public on major issues and topics in American education. The Depart-

ment did not identify the particular projects that should be conducted; that task was left to the individuals and institutions who prepared the detailed proposals. Nearly 100 applications were submitted, many representing consortia of collaborating institutions. In the last quarter of 1990, the Department announced the establishment of 17 National Research and Development Centers. In 1991, the total number of these centres was 25, with each receiving approximately $1 million a year.

Also in 1990, ten Regional Educational Laboratories were established, to provide technical assistance and dissemination in order to support school improvement activities throughout the nation and territories. During the 1990 competition, the contracts were modified to include some applied research. More than 90 per cent of OERI's R&D support continues to go to National Research and Development Centers and Regional Educational Laboratories. OERI also supports various other research and dissemination activities, for example ERIC and the NDN.

Other major sponsors of educational research include the NSF, the NIH, the Department of Defense (particularly the Office of Naval Research), and other agencies. States contribute to educational research clearly connected to implementation issues and state law-required mandates. Some states and local education authorities have small research offices, many of which focus on testing and evaluation.

According to a survey conducted by the NAE (National Academy of Education, 1991, p. 240), foundations provide a "minuscule portion of their education funding to research" (approximately $36.7 million was spent by the nation's 28 leading education foundations on research in 1991). The NAE concludes that foundations disburse their funds in ways that promote educational change. Universities engage in mainly three types of sponsorship: *i)* direct research support (seed money for research initiatives, assistance in publishing materials, and travel grants); *ii)* indirect support (research leave and sabbaticals); and *iii)* indirect support (research overhead, computer time, and technical support).

Research themes and methods

Since the early 1960s, there have been a number of changes in the approach to educational research. Timpane (1994, p. 4603) has outlined the two developments in particular which precipitated these changes: *i)* the collapse of linear models of research, development, testing, demonstration and evaluation as explanations of the application of educational research results to programme operations; and *ii)* the parallel collapse of systematic planning models as explanations of the translation of educational research results into new educational policy.

Currently there are a plethora of acceptable approaches that jostle for attention as serious and worthy of federal funding. Each approach has its own proponents and justifications. Because of the lack of consensus as to method and approach as well as topic, what has occurred in the United States, as Timpane (1994, p. 4603) points out, is a:

> "(...) segmentation of the research agenda into an array of topically significant programs (reading, teaching, bilingual education, desegregation, education organization, finance and so forth) within which are nested continuing grant programs for

individuals and small groups of investigators and selected directed studies performed mostly by institutions – all undergirded by research plans and broad field participation in project review and selection''.

An additional development has been an increased desire to link research with practice. This has come about because of a rising scepticism as to the value of more esoteric methodologies that fail to connect with teacher needs, as well as a more positive inclination to address the experience teachers face from a qualitative perspective that they themselves would find more ''user-friendly''. As efforts have increased, particularly at the federal level, to bring research closer to practitioners' experience, there has been a growing recognition that teacher training in the United States does not introduce them to research in a way that will encourage its use.

A common distinction is drawn in the United States between ''basic'' and ''applied'' research, with the former adhering to the OECD classification of ''experimental or theoretical work, undertaken primarily to acquire new knowledge of the underlying foundation of phenomena and observable facts without any particular application or use in view'', and applied research as the search for new knowledge ''directed primarily towards practical aims or objectives''. In practice, however, the distinctions between basic and applied research are not always so clear. For example, the federal government has funded – since the mid-1960s – National Research and Development Centers and Regional Educational Laboratories but has failed to make clear distinctions between the types of basic and applied research to be carried out by each entity. A 1973 report by the General Accounting Office, the auditing arm of Congress, found little difference between the two types of institution, even though the National Research and Development Centers were charged primarily to engage in basic research, and Regional Laboratories were to be engaged primarily in development.

Increasingly, Congress has been less interested in the distinguishing features of basic and applied research and more concerned with making more explicit the range of applied research it considers useful. In this connection they have made more effort to spell out the meaning of three other terms – ''development'', ''dissemination'' and ''technical assistance'' – in OERI's authorising legislation. ''Development'', for example, is defined in the current legislation as the ''systematic use, adaptation, and transformation of knowledge understanding, gained from research to create alternatives, policies, products, methods, practices or materials which can contribute to the improvement of educational practice; and includes the design and development of prototypes and the testing of such prototypes for the purposes of establishing their feasibility, reliability and cost-effectiveness'' (Title IX, Part A, Section 912.1.4, P.L. 103-227).

The definition in P.L. 103-227 is broad enough to include a wide variety of approaches:

> ''The term 'educational research' includes basic and applied research inquiry with the purpose of applying tested knowledge gained to specific educational settings and problems, development, planning, surveys, assessments, evaluations, investigations, experiments and demonstrations in the field of education and other fields related to education.''

Priorities for policy and research

A more activist federal role has emerged since the 1980s. This role was fuelled by worries that the nation was falling behind its economic competitors in terms of student achievement. This concern reached a height with the Education Summit at Charlottesville, Virginia, when the nation's 50 state governors gathered together with the President to establish six national goals for education. In March 1994, after considerable debate in Congress, the *Goals 2000: Educate America Act* was passed. It included an expansion of the national goals from six to eight and an authorisation for a National Education Goals Panel mandated to monitor progress towards achieving these goals. The 18 members of the National Education Goals Panel, who are appointed in bipartisan fashion from among the nation's governors, members of Congress and state legislatures, have utilised a wide range of databases, many of which are collected by the NCES, to provide a set of key indicators that offer information on progress towards the eight national goals.

The new legislation also provides for grants to states which have developed innovative plans to reach the eight goals. Three broad themes are clearly set out in the new legislation:

- Education reform must be systemic. Standards, curriculum, professional development and assessment should be aligned to support higher standards of achievement for all students.
- The commitment to education reform must be long-term. The development of world-class standards will take time. The federal government's role is to support states and local authorities as they develop their plans by encouraging more flexible approaches to the use of federal funds.
- To achieve the eight goals, the state, local and federal governments will form an educational partnership. Since the Charlottesville summit OERI has sponsored, both solely and in partnership with private organisations and other federal agencies, the development of academic standards by independent professional groups. Standard-setting activities are under way in the areas of science, history, government and civics, geography, English language, foreign languages and the arts for elementary and secondary schools. These efforts were modelled to a considerable extent on the highly praised standards developed by the National Council of Teachers of Mathematics (NCTM). In the area of workforce skills, the Department of Education and the Department of Labor are supporting the development of voluntary national occupational skills standards by various industry groups. Voluntary national standards will also be developed, and all standards may be submitted to the National Education Standards and Improvement Council (NESIC).

Problems and prospects

The United States is well known as a country that delights in change. Its system of divided government encourages a constant tension between the legislative and executive

branches as to the policy direction that should be followed. Congress is charged with the responsibility of reviewing laws periodically – usually every five years – and conducting hearings on whether the legislation fulfils its purpose. In 1994 it was the turn of the legislation governing the federal educational research function to be reviewed. This review made it clear that Congress wanted to see significant changes made in both the structure as well as the size and scope of the educational R&D enterprise.

In a nutshell, new legislation provided OERI with a considerable measure of independence from the executive branch to develop its R&D priorities over the long term without political interference; five new institutes were established to direct the educational R&D effort along thematic lines; and a new Office of Reform Assistance and Dissemination was given the charge of disseminating research-based information in ways that engaged practitioners and the public. Each one of these changes was designed as a response to some long-standing criticisms of the federal research enterprise – that it was too politicised, too fragmented and not sufficiently aware who the ultimate consumers were of its products. There are several challenges that the Assistant Secretary together with her new Board will need to address:

- There is a widely held desire to shrink the size of government. At the same time, the new legislation calls for a more expansive mission for the R&D enterprise. How will the new Board address the need to add more resources, in terms of staff and funding, to accommodate the new, expanded role the legislation calls for?
- How will each of the new institutes work with the new Office of Reform Assistance and Dissemination to become more responsive to the consumers?
- What are realistic goals for the R&D function over a 15-year period? How should a long-term research agenda be constructed that fully reflects both short-term as well as long-term needs?
- To what extent can Congress, hitherto sceptical of educational R&D, become more supportive of research needs?

There are good prospects that each of these questions can be solved over the long term. The legislation that Congress passed did receive bipartisan support and, despite some more extreme efforts to reduce the size of the government, resources have been found to continue work that has historically been seen as a natural federal role. Inevitably, however, the new OERI is expected to experience growing pains. The new board members will have to become accustomed to the political environment and see themselves in many ways as advocates for a far more serious approach to educational R&D than has existed within the federal government for a very long time. They may be discouraged at first by the size of OERI's budget for research, not only compared to other agencies (for example, the expenditure is only one-third of those devoted to agriculture) but also represented as a percentage of OERI's overall budget – only an estimated $58.1 million of a $381 million budget went to R&D in 1991, just 15 per cent of the total (National Academy of Sciences, 1992, p. 99). It is likely that before the budget receives the kinds of increases that will place it on a par with the budgets of the NSF or the NIH, there will need to be some critical new steps taken to show the value of educational R&D to improve schooling.

There is much anecdotal evidence as to how federal investments have helped change the educational landscape, but the effects, indirect or not, need to be more sharply defined to respond to an environment in which the quality of government services is being assessed in terms of tangible, measurable outcomes. OERI will have the opportunity during this period of working closely with some selected sites to test how a range of R&D services can be brought to bear to help solve some knotty issues being addressed throughout the nation by urban and rural school districts alike. How, for example, is it possible to move from an assessment system that reflects ability to memorise, to one that really captures the quality of a student's thinking? How can professional development be made more effective?

There is no doubt that the next few years will be an exciting period for federally sponsored educational R&D in the United States. There is a new commitment on the part of the federal government to want to seriously address the task of comprehensive and systemic reform in order to meet eight ambitious national education goals. There is a growing acknowledgement that this effort will not succeed without a more powerful way of making R&D findings more accessible to a wider audience than has hitherto been the case. In the final analysis, OERI's reorganisation has placed it in a good position to show how its investments in knowledge production can make a difference.

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Annex 2

List of subject interests drawn from country reports

Studies of learning and teaching

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Education and working life.
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Student outcomes.
Literacy.
Gifted students.
Mathematics and science education.
Special education.
Language education and linguistics.
Preschool education.
Condition of primary schooling.
School libraries.
Appraisal of teaching programmes.
Objectives of secondary education.
Encouragement of the gifted.
Environmental education.
Health education.
Violence and extremism.
Cultural education.
Distance education.
Effective schools.
Learning in educational settings.

Teacher training and staff development

Teacher education.
Enhancing professional training and development.
Skill formation and staff development.
Careers of teachers.
The role of the teacher and priority areas of teacher action.

Social contexts of education

Gender issues.
Equality of opportunity.
Socially excluded and disadvantaged.
Problems of social integration.
Problems of minorities.
The environment.
Effectiveness of educational system in face of demographic and technological change and multilingualism.

Government and policy

Policy studies and informing policy development.
School autonomy.
New federal states (in Germany).
Governance.
Finance.
Administration.
Outcome assessment.
Educational policy evaluation.
Management and administration of schools.
Management educational outcomes (effective schools) and quality measurement.

Structural issues

Types of schools.
Isolated schools.
Access to compulsory education.
Comprehensive schooling.
Transition from education to work.
Transition from secondary to tertiary education.
Streaming of pupils.
Mergers of schools.

Higher education, employment and training

Manpower requirements.
Administration of higher education.
Drop-out rates and long duration of higher education.
Democratising of higher education.

Curricular reform.
Student support issues.
Graduate labour market.
Internal institutional management.
Vocational education and adult education outside the university.
Equivalence of general and vocational education.
Articulation of degrees and diplomas in higher education institutions.
Institutional models in higher education.
Systems of certification and qualification.
The role of higher education institutions in continuous training.

International issues

Implications of entry into European Union for higher education.
International co-operation.

Methodologies

Strengthening methodologies.
Exploiting longitudinal studies.
Comparative and experimental approaches.

Annex 3

Methodology used in measuring indicators of educational R&D

The desirability of developing indicators of educational R&D activity was noted in the first "Handbook of Education Indicators" produced by the OECD's educational indicators (INES) project (OECD, 1991, p. 29):

> "It would be desirable to know the number of educational research programmes, together with their staffing and financing, and possibly construct a complete index. However, as some of this information might prove unobtainable on a comparable basis, it would be acceptable to measure this by using educational research expenditure as a proxy."

Building on work undertaken for the general review of educational R&D in Australia (*cf.* Annex 1, Case Study A.1), the Australian Council for Educational Research worked with the INES programme to develop initial expenditure and personnel indicators for educational R&D. These indicators are based on the definitions and conventions contained in the *Frascati Manual* (OECD, 1994) which establishes OECD's approach to the measurement of R&D activities in general.

The *Frascati Manual* is oriented primarily to the collection of data on national resources allocated to R&D activities as a whole. The manual provides less direct guidance on specific fields of R&D, especially those in the social sciences such as education. According to the *Frascati Manual*, three major principles should guide the development of R&D indicators:

- Data on R&D should be collected directly from the performing units, *i.e.* the organisations, institutions and individuals that actually perform the R&D activities.
- The data should be collected and reported in as disaggregated a form as possible.
- The development of internationally comparable indicators is facilitated when countries supply full details of the data sources, methodologies and assumptions that they have used.

Throughout the manual there are comments and examples that are relevant to educational R&D, especially in terms of definition issues. The most explicit reference to education is contained in the discussion of Fields of Science and Technology (FOST) where "Educational sciences (education and training and allied subjects)" is itemised as a major subsection of the Social Sciences FOST. Countries that collect R&D data according to FOST have the potential to identify separately R&D in the field of education.

The other place in which an explicit reference to education may have been expected is in the discussion of Socio-Economic Objectives (SEO) of R&D activities. This classification is intended to identify the areas of expected national benefit from R&D activities. Education is not identified as a separate objective, presumably on the grounds that it is

not a national objective in its own right but rather a means to, or a manifestation of, broader social development.

The Australian Bureau of Statistics' national R&D survey does identify education as a separate SEO and so permits a distinction between R&D activities devoted to education as an SEO, from those allocated to education as a FOST. In the most recent Australian survey, expenditure on educational R&D as an SEO was around 10 per cent greater than expenditure as a FOST. The reason for the discrepancy is that education is only one of the fields of science (albeit the largest) in which R&D activities contribute to the national objective of improving education. Other FOSTs that made R&D contributions to education included medicine and various branches of the humanities and social sciences.

In some respects, the more broadly based SEO classification of R&D activities is more appropriate to an area like education than is the FOST classification. Since the *Frascati Manual* makes no explicit reference to education as an SEO, however, this classification is not likely to be of any use in international comparisons using indicators of educational R&D. In fact, the manual notes that only one-half of OECD countries make a detailed breakdown of R&D expenditures in any sector by SEO. Using the FOST classification will lead to some understatement of the R&D resources allocated to education, unless data collection is sensitive to the possibility that research relevant to education may be conducted in FOSTs not defined as education.

For any estimation of resources committed to educational R&D, the first task is to establish a clear definition of R&D. The *Frascati Manual* adopts definitions which are discussed in Chapter 3 of this volume.

In relation to testing and standardisation, a recent Australian project raises some interesting points about the general principles of classification. A state government introducing a new monitoring programme of students in Grades 3 and 6 commissioned the Australian Council for Educational Research to develop the tests, score and analyse the answers, and develop and prepare reports for parents and teachers. The test development and the reporting, in particular, involved novel work. The data entry, which was all done by machine scoring, then had some novel elements, as did the data analysis because it provided the basis for calibration of the tasks in the tests and measurement of the students and also because it provided the foundation for the methods of reporting. After four years, the state education department took over the project itself.

Over the six-year period of this large project, it has become clear that more and more of it is now routine. It is possible that some of it was routine even in the first year. From the point of view of the recommendations in the *Frascati Manual*, the task of estimating R&D activities involves determining from year to year what proportion of the total project activity should be considered to be R&D. The general principle is that activities should be classified as R&D only if they are undertaken as an integral part of a specific research project contributing directly to R&D and undertaken exclusively for R&D.

The manual defines three main types of R&D activities (given in more detail in Chapter 3): basic research, applied research and experimental development. The following example from R&D on reading is provided in the manual to illustrate the three types of R&D in the field of education:

- *Basic research* would include a study of the reading process in adults and children, for example an investigation of how human visual systems work to acquire information from symbols such as words, pictures and diagrams;
- *Applied research* would include a study of the reading process for the purpose of developing a new method of teaching children and adults to read;
- *Experimental development* would include development and testing of a special reading programme among immigrant children.

In practice, of course, the distinction between these types of research is not always easily drawn, and it is necessary to provide estimates with varying degrees of precision. The general principle adopted by the manual is that such estimates are best made by the research-performing units.

The *Frascati Manual* also distinguishes five R&D sectors:

- business enterprises
- government
- private non-profit
- higher education
- abroad

Reporting of data by sector is particularly important in the development of international indicators, since the institutional framework for R&D can vary markedly from country to country. The sectoral data can be used to classify R&D performing units and the sources of their funds.

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